

Financialization and the New Organizational Inequality in U.S. Higher Education

By

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Abstract

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This dissertation advances scholarship on how financialization – the increasing power of financial ideologies and markets – has transformed diverse organizations, including non-profits, state institutions, and households. In three papers, I explain how financialization has contributed to rising organizational inequality in U.S. undergraduate education since the 1990s: 1) “The Financialization of U.S. Higher Education” develops new quantitative measures to find large but skewed relative increases in the financial costs and returns from endowments, colleges’ institutional borrowing, equity offerings by for-profit colleges, and student loan borrowing, 2) “The Transformation of U.S. For-Profit Colleges,” uses a unique college-level and multi-wave longitudinal dataset to show how the spread of shareholder value ideology led to a new industrial-scale business model with negative consequences for student outcomes, and 3) “The Ivory Tower Tax Haven” explains how long-standing tax exemptions have supported new endowment investment strategies that have fueled rising expenditures to maximize the prestige of the wealthiest universities. Altogether, I highlight the importance of finance ideologies in the shifting balance of resources between and within the many heterogeneous types of U.S. colleges.

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CHAPTER 1:

Introduction

Following World War II, the United States pioneered a system of mass undergraduate higher education that promoted economic mobility and civic equality across a broad swath of Americans (Goldin and Katz 2009; Loss 2011; Mettler 2005). In the first decade of the 21st century, however, the U.S. has fallen out of the top 10 countries for four-year college degree attainment. At the same time, the U.S. higher education system has become increasingly unequal even for those who go to college. Political scientist Suzanne Mettler has gone so far as to argue that U.S. higher education “increasingly resembles a caste system: it takes Americans who grew up in different social strata and it widens the divisions between them and makes them more rigid” (2014, 15).

Mettler’s argument connects recent findings of an increasing disparity in resources and quality between elite colleges at the top and a mix of for-profit and cash-strapped public and non-profit schools at the bottom. Wealthier students disproportionately enroll in elite schools while low-income students predominate at the bottom of the system. Inadequate resources at the bottom then exacerbate the large gap in college graduation rates and benefits between rich and poor (Webber and Ehrenberg 2010). Relatedly, students from at the bottom struggle much more under the burden of student debts and the risk of default (Looney and Yannelis 2015).

We have important but incomplete explanations for this increasing inequality in the U.S. higher education system. First, multiple studies have found that state funding for public institutions has not kept pace with rising demand for higher education, particularly among lower-income groups (Quintero 2012; Weerts, Sanfordeah, and Reinert 2012). This has meant fewer resources per student at less prestigious state universities and community colleges. It has also meant that an increasing number of students have enrolled at for-profit colleges after being turned away by overcrowded public schools (Bound and Turner 2007). At the same time, Mettler argues that political polarization and an ascendant plutocracy have obstructed needed political efforts to steer adequate resources to higher education for low-income groups.

Still, important questions remain unanswered about the new regime of U.S. higher education inequality. Most prominently, research on the explosion of student debt has neglected to examine whether some types of schools have relied more or less on student loans as a revenue source. In addition, explanations are lacking for the particularly acute problems with graduation rates and student debt found at for-profit colleges. On the other end of the higher education spectrum, little has been written to explain the increasing wealth of elite private institutions.

This dissertation asks if these critical dimensions of higher education inequality were shaped by a broader change in U.S. society since the 1980s – that of financialization. The concept of financialization describes a multifaceted transformation. First broad swaths of society have increasingly participated in financial markets. In doing so, wide ranging institutions have also increasingly organized themselves according to prevailing ideologies about unfettered financial markets. Corporations, financial institutions, governments, non-profits, and households all got in the game. They have

done so by increasingly engaging in a variety of financial transactions from stock market investing and mortgage refinancing to bond offerings and derivatives trading. The U.S. has also increasingly become what Gerald Davis calls a portfolio society (2009). Portfolio society is guided by financial ideologies that conceive of everything from businesses, homes, cars, skills, and credentials as assets to be valued according to the financial returns they are expected to yield.

I take a rather cultural approach by asking if the spread of such financial ideologies has contributed to the rising inequality in U.S. education. This approach anticipates that state and private actors could all increasingly turn to financial transactions and new financial management techniques to solve resource problems, even in organizations that explicitly do not accumulate profits. Having adopted some variant of finance ideology, America's organizationally diverse colleges could then increasingly turn to the exact types of higher education financial transactions that best suit their particular resource dilemmas and organizational missions. The main such financial transactions in U.S. higher education are 1) endowment investments, 2) bond borrowing, 3) equity investment in for-profit colleges, and 4) student loans.

Allocating resources through such financial transactions, however, is likely to result in more resource inequality than traditional tax and spend systems of allocation. This is because the underlying ideologies of financial transactions argue that capital should be allocated in order to maximize immediate financial returns for the investor (Davis 2009) – even if the allocated resources are to be used for a public good such as education. Meanwhile, those with the least wealth are viewed as risky by financial investors and therefore must pay the highest financing cost in exchange for capital (Davis 2009; Fourcade and Healy 2013; Weber 1978). On the other hand, those with the most capital such as wealthy colleges can seek out the highest rate of return (Piketty 2014, 448).

In the pages that follow, I investigate precise forms that financialization has actually taken in U.S. higher education and their implications for higher education inequality. I do so in three separate empirical papers that look at the higher education system as a whole as well as its two most extreme components – for-profit colleges at the bottom and wealthy private universities at the top. Before prefacing these papers further, however, it will help to provide some more background on the widening inequalities in U.S. higher education that I seek to explain.

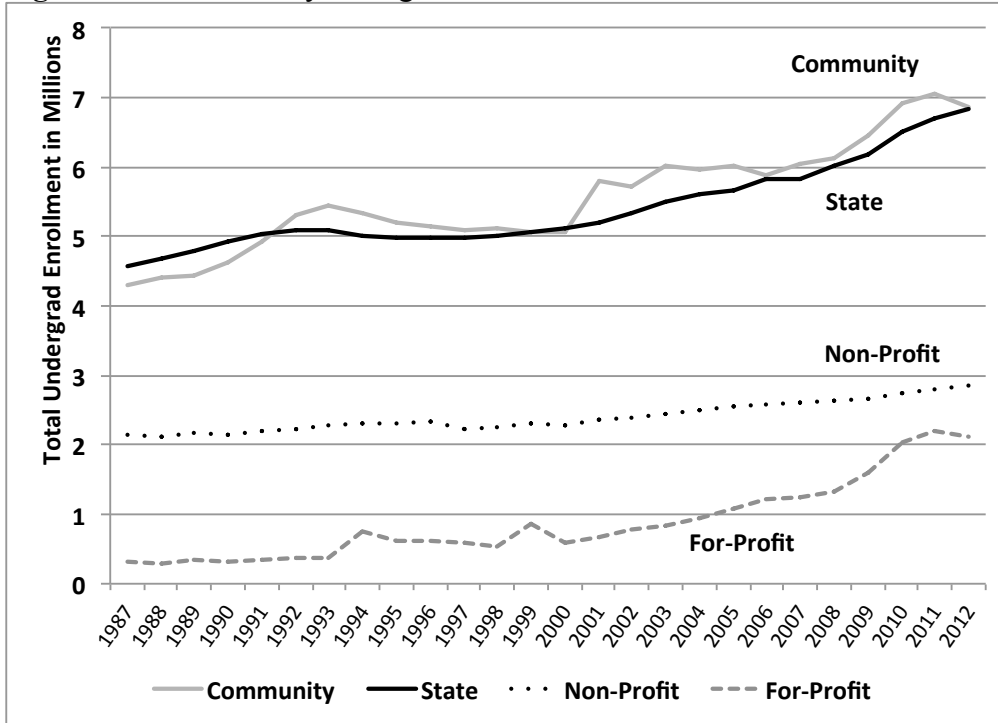
Background: Inequality in U.S. Higher Education

Large inequalities in undergraduate education have long existed between America's diverse institutions of higher education. These inequalities stem from the heterogeneity of colleges' institutional origins, the students they serve, the educational programs they offer, the scope of their research, and their sources of revenue (Shavit, Arum, and Gamoran 2007; Stevens, Armstrong, and Arum 2008). In recent years, however, inequalities have begun to widen. Namely, the disparity in financial resources has grown between rich and poor schools. At the same time, a greater share of all students and of low income students have become concentrated at schools on the bottom of the resource ladder. This further compounds the disadvantages of low-income students that drag down their graduation rates (Bound, Lovenheim, and Turner 2009, 2012).

The widening of inequality in U.S. higher education begins with the concentration

of enrollment growth at public and for-profit schools. U.S. higher education is divided into four sectors by regulators and official statistics according to ownership and highest level of degree offered: 1) private non-profit, 2) state, 3) community, and 4) for-profit. Private non-profit schools overwhelmingly offer only four-year degrees or higher, but Figure 1 shows that their enrollment growth has been relatively limited since 1988. In contrast, enrollment has grown rapidly at state schools which offer four-year degrees, community colleges which traditionally offer only two-year degrees and lesser certificates, and for-profits which offer all levels of post-secondary degrees.

Figure 1: Enrollment by College Sector



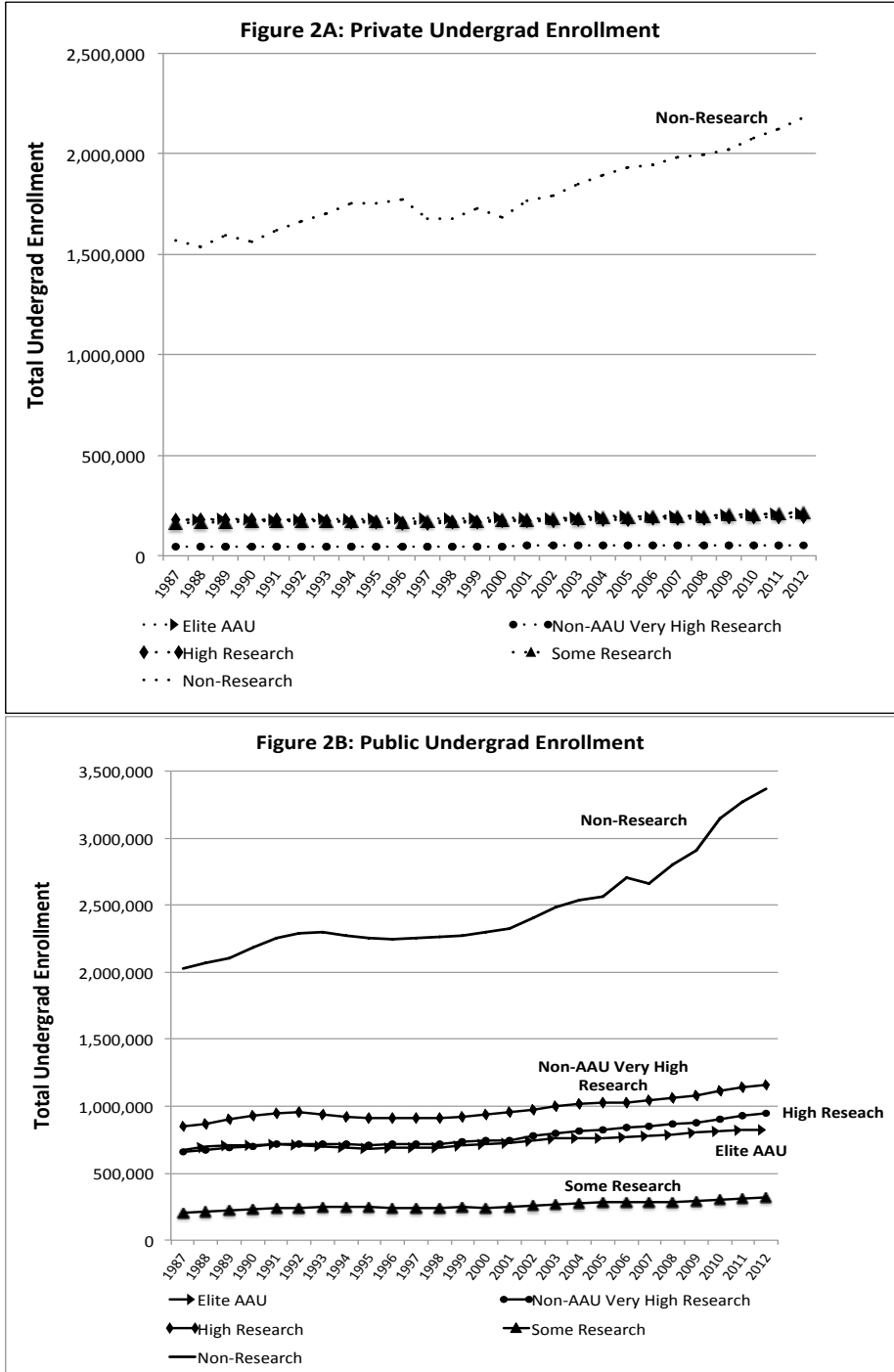
Source: IPEDS.

Closer examination, however, shows that undergraduate enrollment growth has been even more concentrated at lower-resource and prestige schools than is at first apparent. State and non-profit research universities have long enjoyed greater prestige and resources that also benefit undergraduate education. (Brewer, Eide, and Ehrenberg 1999; Brewer and Susan 2002; Brint 2005; Geiger 2002; Gumport 1993; Kelly and Schneider 2012; Webber and Ehrenberg 2010; Winston 1999). Yet enrollment growth has been most concentrated at schools that conduct less research. Figure 2A shows total enrollment at private non-profit schools by groupings for Carnegie Classification measures of research intensiveness and membership in the Association of American Universities (AAU), an organization of the most elite U.S. research universities. This reveals that total enrollment has only increased for “non-research” non-profits. Total enrollment, meanwhile, has remained essentially flat for non-profits in the categories of “elite AAU”, “Very High Research”, “High Research”, and “Some Research”.

Enrollment growth and public institutions has been more widespread but similarly higher at non-research institutions. After considering scaling differences between Figure

2A and 2B we can see that total enrollments of “Elite AAU”, “Non-AAU Very High Research”, and “High Research” all increased by hundreds of thousands of students. Still, undergraduate enrollment increased much more at “Non-Research” state schools – from 2 million to almost 3.5 million, a 70 percent increase. This reflects the increase at public community colleges from just over 4 million to 7 million shown in Figure 1.

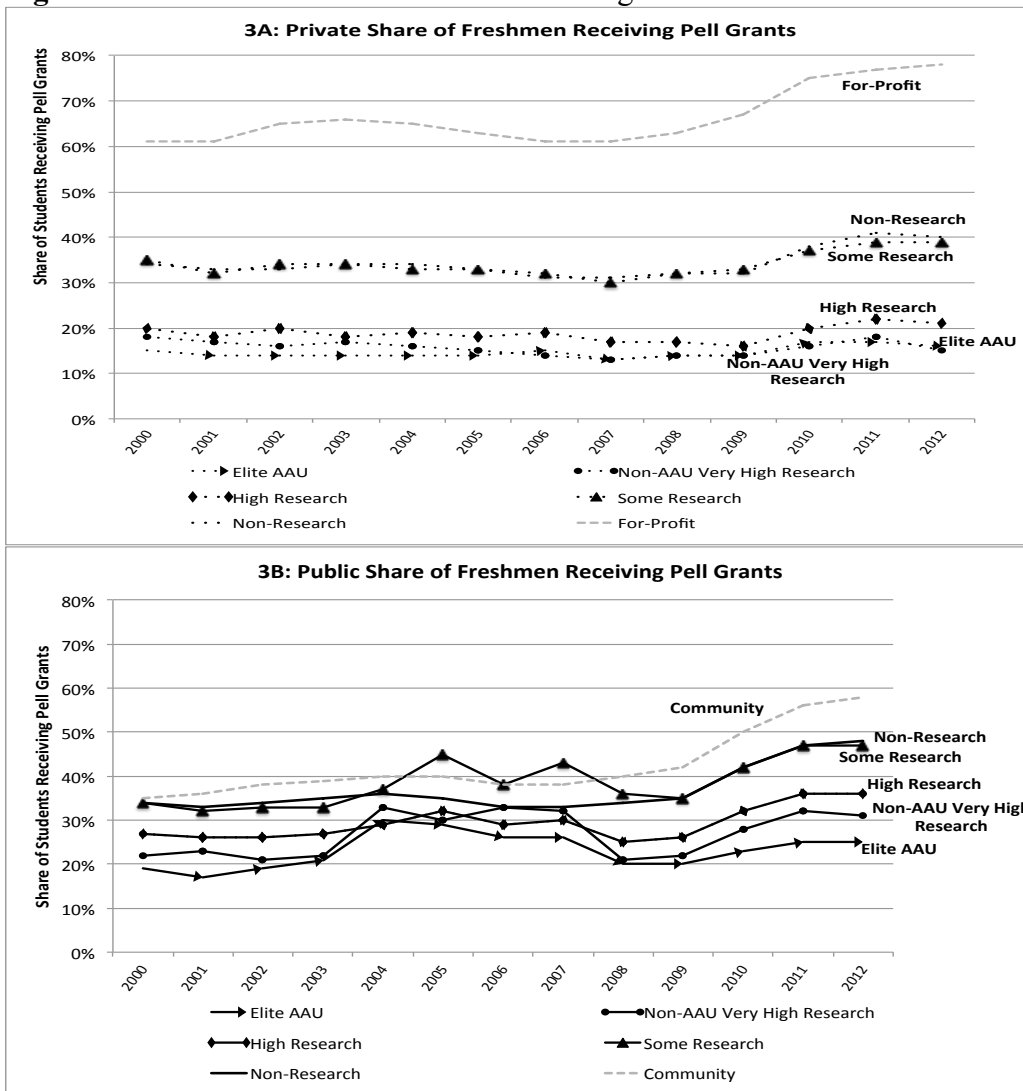
Figure 2: Undergrad Enrollment by Sector and Research Tier



Source: IPEDS.

As increasing college attendance by low-income students drove undergraduate enrollment increases, a disparity in low-income enrollment has also grown between schools at the top and the bottom of the U.S. higher education system. The earliest indicator we have for low-income enrollment is whether students received the means-tested federal Pell Grant for low-income students. Figure 3 shows that the share of undergrads receiving Pell Grants was consistently at 20 percent or below at non-profit schools with at least High Research activity between 2000 and 2012. In contrast, the share of students who received Pell Grants increased from 60 percent to nearly 80 percent during the same period. The share of students receiving Pell Grants also increased across all public research university categories. By 2012, the share of students receiving Pell Grants topped 30 percent for all public research university categories except Elite AAU schools. The share of students receiving Pell Grants increased from approximately 35 percent to nearly 50 percent for “Non-Research” and “Some Research” publics and to nearly 60 percent for public community colleges.

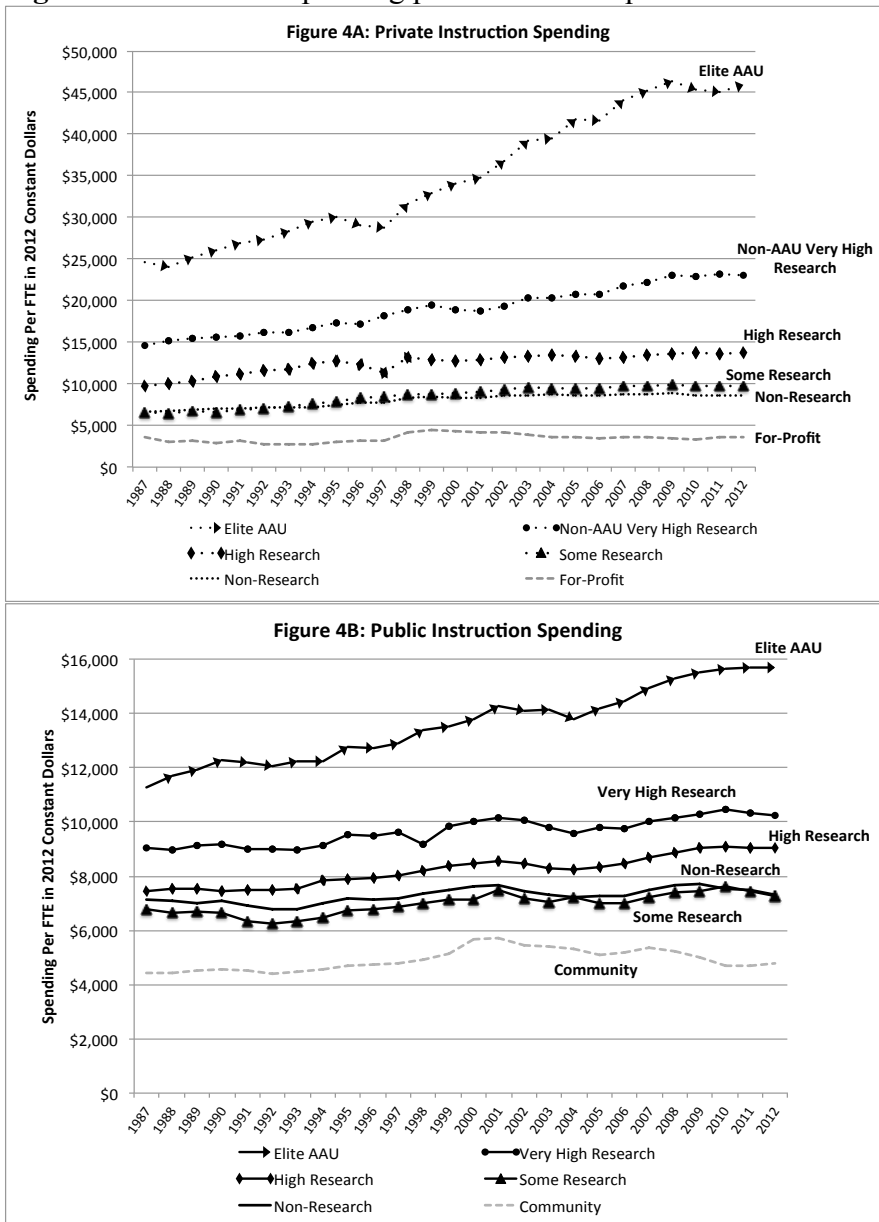
Figure 3: Share of Fulltime Freshmen Receiving Pell Grants



Source: IPEDS.

Finally, we can see widening inequalities in spending on instruction, particularly between elite non-profits and the rest of the higher education system. Increasing enrollment of low-income students has increased instructional needs particularly at for-profits, community colleges, and state schools with less research (Bound, Lovenheim, and Turner 2009). Yet Figure 4 shows that instruction spending per full time equivalent student in 2012 constant dollars was low and flat from 1987 to 2012 at community colleges (around \$5,000), at for-profits (around \$4,000), and at “non-research” and “some research publics” (around \$7,000). In contrast, we see radical increases in instruction spending per student at non-profit “elite AAUs” from \$25,000 to \$45,000 and at non-AAU very high research non-profits from \$15,000 to \$23,000.

Figure 4: Instruction Spending per Full Time Equivalent Student



Source: IPEDS.

Despite these growing inequalities between colleges, the old adage that “college isn’t for everyone” sums up the widespread assumption that getting a college degree depends mainly on the individual characteristics of students. Fortunately, a new wave of research is challenging this prevailing wisdom by asking how differences in the organizational forms, resources, and characteristics of colleges contribute to undergraduate success and educational stratification (Armstrong and Hamilton 2013; Gerber and Cheung 2008; Scott 2015; Shavit, Arum, and Gamoran 2007; Stevens, Armstrong, and Arum 2008). We have particularly clear evidence that resource shortfalls in the middle and the bottom of the higher education system have both constrained enrollment (Bound and Turner 2007) and limited graduation rates for those who do enroll (Webber and Ehrenberg 2010). Failure to complete a four-year degree meanwhile is a major driver of student loan defaults that are a mounting concern (Looney and Yannelis 2015).

Finance and Inequality in U.S. Higher Education

It is important to ask not just about the consequences of the new higher education inequality but also its causes. As I noted earlier, the failure of state funding to keep up with undergraduate enrollment growth is undeniably central to this story (Mettler 2014; Quintero 2012; Weerts, Sanfordeah, and Reinert 2012). Constraints on state funding, however, cannot by themselves explain the contours of higher education inequality that we have just reviewed. Most glaringly, how can we explain the radical rise of for-profit colleges? Similarly, how can we explain the precipitous rise in instruction spending per student at the most elite non-profits where enrollments have remained flat?

All together, this dissertation asks how the deployment of new financial ideologies across the different organizational forms of U.S. colleges may have contributed to these key features of increasing higher education inequality. The role of financial ideologies in the federal government expansion of student loan offerings since 1990 has already been documented (Berman and Stivers 2016). But we lack a clear assessment of how different types of colleges responded to the dual challenge of state funding reductions and of increased student loan financing. We also need to ask if different types of colleges adopted new financial strategies or alternative courses of action in order to survive and achieve established goals in this environment. Formal organizations such as colleges, after all, are fundamental social units that provide both collective identities and shared understandings for adapting and applying ideologies (Drucker 1992).

This dissertation is comprised of three standalone empirical papers. Chapter 2, the coauthored “Financialization of U.S. Higher Education”, assesses the extent to which financialization of U.S. colleges has actually occurred. It develops new measures for returns and costs across four main types of types of higher education transactions: 1) revenues from endowment investments, 2) interest payments on institutional borrowing by colleges, 3) profits extracted by investors in for-profit colleges, and 4) interest payments on student loan borrowing by households. This data reveals that financialization was widespread across U.S. colleges. Increases in endowment financial returns, however, were concentrated at wealthy colleges while increases in financing costs tended to outpace returns at poorer institutions.

Chapter 3 looks more closely at the spread of a particular financial ideology – shareholder value – in the “The Transformation of U.S. For-Profit Colleges.” It asks if the spread of shareholder value and its prescriptions for maximizing returns for investors can explain the for-profit college boom and problems with the new for-profit business model. It specifically tests if publicly traded and private equity forms of shareholder value ownership led to a new business model of industrial-scale recruitment that also loaded students with unmanageable levels of educational debt and shortchanged instruction.

In Chapter 4, “The Ivory Tower Tax Haven,” I ask if the adoption of new financial ideologies by university endowment managers can explain soaring expenditures by elite private universities. I use a case study of Stanford University financial practices, including new endowment management techniques for tax avoidance. This paper connects existing theories of prestige competition among universities (Ehrenberg 2000; Winston 1999) with a cultural view of financial ideologies that can be adopted even at non-profit and non-financial organizations to achieve pre-existing institutional goals (Fligstein 2001; Pacewicz 2013b; van der Zwan 2014).

I conclude the dissertation in Chapter 5 by discussing why the three empirical papers together show that financialization is best conceived of as an ideological phenomenon. The spread of finance ideologies and practices across diverse public, non-profit, and for-profit colleges alike shows that financialization cannot be reduced to a process of profit accumulation or rent extraction. I also propose a set of policy implications and the particular need for further research on how financial ideologies gained adherents among public, non-profit, and for-profit college leaders.

CHAPTER 2:

The Financialization of U.S. Higher Education (with Jacob Habinek, Adam Goldstein, Cyrus Dioun, Daniela García Santibáñez Godoy, and Robert Osley-Thomas)

Financialization reshapes economic life in industrialized societies by extending the reach of financial markets, logics, and actors into new and varied domains (Epstein 2005; Krippner 2011; van der Zwan 2014). It is well documented that returns on financial investments now account for an increasing share of both corporate and individual incomes (Krippner 2005, 2011; Nau 2013; Orhangazi 2008). Other studies detail the growing role of finance in the management of corporations (Fligstein 1993, 2001; Zorn et al. 2005), municipalities (Pacewicz 2013b), and households (Davis 2009; Fligstein and Goldstein 2015; Langley 2008; Martin 2002). While few areas of industrialized economies and societies appear untouched, research has been constrained by limited suitable measures to gauge the extent of financialization outside of the for-profit sector. This in turn limits our knowledge of financialization's impacts on important social structures, including systems of social provision that encompass diverse household, non-profit, and state institutions.

We address the problem of measuring financialization beyond the for-profit sector by asking how the size and distribution of financial transaction costs and returns have changed for the U.S. higher education system since the beginning of the 21st century. Our aims are primarily descriptive. By comprehensively measuring the balance of all major financial transaction costs and returns for different types of organizations over time, we can see both the reach of financialization and key indications of how it allocates resources within the field.

A major contribution of this article is to introduce an original and comprehensive higher education dataset that we have constructed to implement our novel approach to measuring financialization. The rapid growth of student loan debt in the United States is already well known with outstanding student loan balances nearly tripling from \$364 billion in 2004 to \$966 billion in 2012 (Avery and Turner 2012; Brown et al. 2014; Houle 2014). By linking annual, college-level data from multiple surveys from 2003 to 2012, however, we are able to estimate the total costs and returns for the four most significant types of higher education financial transactions: 1) revenues from colleges' endowment investment returns, 2) interest paid on institutional debts by non-profit private and public colleges 3) operating profit margins for equity investors in for-profit colleges, and 4) interest paid on student loan debts by households. The institution-level structure of our dataset also allows us to provide new details on the distribution of student loan borrowing and the other major financial transactions across different types and wealth strata of colleges in the U.S. We are unaware of any other comparable datasets with comprehensive, institution-level financial transaction data over time for a field that encompasses state, non-profit, for-profit, and household organizations.

Analyzing our original dataset, we find surprisingly large relative growth in the real value of costs and returns for all four of the major higher education financial transactions. The size and distribution of these increases indicate a multifaceted structural transformation in the financing of U.S. higher education across all major types and

wealth strata of state, non-profit, and for-profit colleges. All told, the combined real costs from interest for institutional debt, operating margins at for-profits, and interest paid on student loans more than doubled from \$21 billion in 2003 to \$48 billion in 2012 – an increase from 5 to 9 percent of total higher education spending.¹ Annual funding for university operations from endowments also grew from \$16 billion to \$20 billion in 2012 constant dollars.

While the increased costs from financial transactions were widespread, funding increases from endowment investments were highly concentrated at a small number of wealthy non-profit institutions that enrolled relatively few students. Wealthy non-profit institutions also had the largest increases in interest costs for institutional borrowing, but those borrowing costs were far outpaced by funding increases from endowment investment returns. In fact, high levels of institutional borrowing by the wealthiest institutions indirectly helped them to grow their revenue from endowments by providing funds for capital investments at a lower interest rate than the average endowment rate of return. On the other hand, less wealthy state and non-profit colleges tended to use most of their institutional borrowing for capital projects in areas that generate commercial revenue such as student residential services. Overall, interest for state and non-profit colleges' institutional borrowing nearly doubled from \$6 billion to \$11 billion. At the same time, for-profit colleges with capital form equity markets quintupled their annual operating profit margins from \$1 billion to \$5 billion.

Despite large increases in financing costs for state, non-profit, and for-profit colleges, we find that spending on interest for student loans increased much more. Growth in student loan interest costs was driven by soaring student loan volumes, particularly among students enrolled at for-profit colleges and at less wealthy private and public institutions. As overall student loan volumes increased, annual student loan interest payments grew from \$13 billion in 2003 to \$34 billion in 2012. From 2003 to 2012, however, the lowest levels of average borrowing by freshmen were at the wealthiest private colleges where average borrowing actually declined.

Our findings have significant implications for economic sociology and the sociology of higher education, laying the ground for future research. By detailing investment revenue for non-profit endowments and interest costs for state funded student loans, we show why financialization should not be viewed as simply a new regime of profit accumulation (Krippner, 2005; Orhangazi, 2008; Nau, 2013). Instead, future studies of potential *causes* of higher education financialization could ask about the role of professional projects and social ties between colleges and the finance sector. In this vein, future research could also ask why different forms of higher education financialization have or have not occurred in particular countries outside of the U.S.

The article proceeds as follows: in the next section, we explain how an analysis of financial revenues and costs can capture the multifaceted nature of financialization in which different actors assume different combinations of roles in financial transactions. We then go on to describe the sources and measures used in our original dataset. The following four sections describe the changes in financial returns and the three main financing costs in turn. Where relevant, we disaggregate different trends across

¹ This number is based on the authors' estimate for total spending on higher education by the state, households, and private funders, including money from donors and other sources such research funding. For a full explanation of how we calculate total U.S. higher education spending, consult the data appendix.

endowment wealth strata and college type. We conclude by further discussing the implications of our findings for future research on financialization and higher education in the U.S. and elsewhere.

Financialization and Higher Education

At the most basic level, financialization is the increasing use of financial transactions to allocate capital. But as actors experience financialization, they assume different roles in financial transactions, including: 1) that of an investor (Krippner, 2005; Orhangazi, 2008; Nau, 2013), 2) that of a borrower (Fligstein and Goldstein, 2015; Houle, 2014), or 3) that of an investment (Fligstein, 1993). Individual persons and organizations may operate in one or more of these roles.

In most empirical research on financialization, the financial returns to investors overshadow financing costs for borrowers and recipients of investment.² By treating financialization as a pattern of accumulation, this approach highlights profits from financial transactions both within and outside the financial services industry (Arrighi, 1994; Orhangazi, 2008). In the most thorough such account, Krippner (2005, 2011) shows that the share of profits going to financial firms increased from between 10 and 20 percent in the 1950s and 1960s to between 30 and 50 percent in the early 2000s. At the same time, the share of profits at *non-financial* firms from interest, capital gains, and dividends increased from under 10 percent in the 1950s to over 40 percent at the beginning of the 2000s (Krippner, 2005: 185).

Although there now exists a growing number of studies of financialization beyond the corporate sector (Davis 2009; Langley 2008; Martin 2002; Pacewicz 2013a, 2013b), quantitative work has lagged. In large part, this is due to an absence of comparable measures for financialization besides profit accumulation. We address this problem in existing research by developing a new approach for measuring financialization in both the costs and returns incurred by actors through their different roles in multiple types of financial transactions.

The U.S. higher education system provides a valuable case for assessing the reach of financialization as a multi-faceted process. The U.S. is unusual among national higher education systems in its high degree of organizational heterogeneity, including state owned, private non-profit, and for-profit colleges. With their complex and varied reliance on state, commercial, and investment revenue, educational providers assume varying roles in financial transactions depending on the college's ownership form and existing wealth. Despite this organizational diversity, there is an exceptional amount of untapped data for the use of financial transactions across all types of U.S. colleges. This wealth of data presents us with an opportunity to systematically assess change in the size and distribution of financial costs and returns within a hybrid system of social provision that includes both public and private service providers.

Returns and Costs of Financialization

In order to document the extent of financialization in a mixed domain of social provision such as higher education, we adopt a straightforward approach to measuring

² For indicators, Krippner uses both measures of profits and corporate cash flow, which is equal to profits minus depreciation allowances which indicate the amount of capital expended to accumulate the capital that comprises a firm's profits (2005, 182).

financialization across multiple roles. We replace measures of financially generated profits with a more general measure of financially-generated revenues, and supplement it with measures of financing costs stemming from borrowing and equity investment. This method builds on the existing accumulation approach by measuring *both* the share of revenues that are generated *from* financial activities, as well as the share of expenditures that are directed *toward* financing costs.

By financing costs we mean the gross costs associated with acquisition of liquid capital. Our approach proceeds from the idea that the significance of finance increases when actors acquire a greater share of resources from the provision of capital, *and* when they devote a greater share of expenditures to the acquisition of capital. Financiers provide recipients with capital in order to fund a given use (in our case, investments by educational consumers and educational providers). Such financing may take the form of debt or equity. In return, financiers seek income from interest, dividends, or capital gains. Payments of interest to creditors and profits to equity investors represent the resulting financial costs. In the aggregate, financial returns and costs can be seen as two sides of the same coin; an increase in financial profits implies an increase in financial costs paid by recipients of capital.

Our approach has several additional advantages for studying financialization across different types of organizations. First, it encompasses a wider array of transactions. For example, households devote a growing portion of their total educational expenditures to interest payments on student loans. As the largest creditor for student loans, the federal government receives substantial revenue from these payments, but the federal government does not accumulate profits from this income in a way that is commensurable with profits accumulated by private financiers. Nevertheless, student loan interest payments provide a useful measure of financialization as experienced both by households in a borrowing role and the government in a lending role.

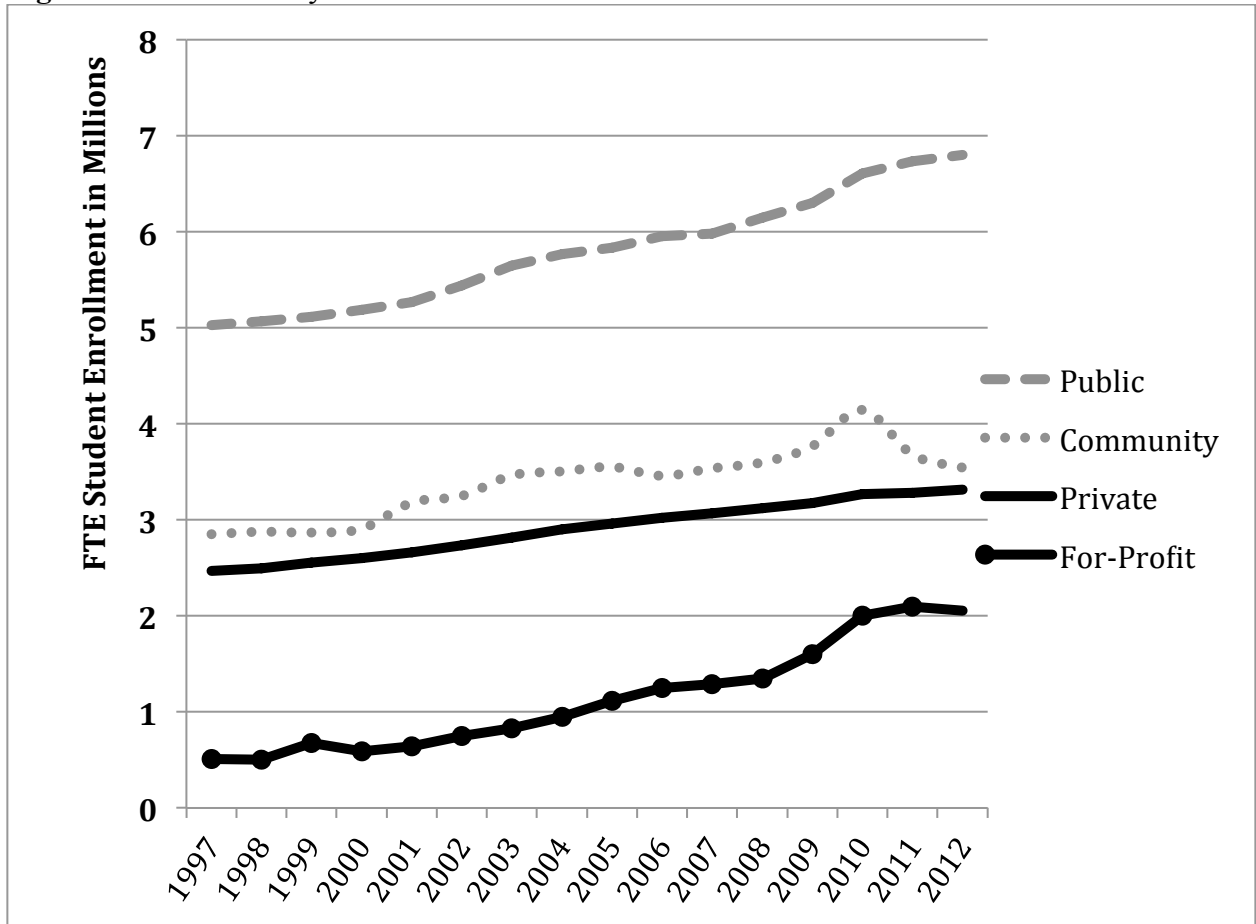
Second, our approach is sensitive to the fact that given organizations can operate in more than one of the roles of investor, borrower, or investment. This means that they accrue revenues from financial transactions at the same time that they pay financing costs to acquire capital. It is important to adopt an analytical approach that is attentive to both sides of this equation. As we show below, some universities have become simultaneously both increasingly reliant on financially generated income from endowments and more indebted, with corresponding increases in the portion of their total expenditures dedicated to servicing these debts. By attending to the costs and returns from all three of the primary financial transaction roles, our approach more fully gauges the extent of financialization in a given organization or field.

Higher Education Finance in the United States

Scholarship on markets and higher education in the U.S. has shown that colleges and universities earn revenue from complex and multi-layered sources, including state subsidies, tuition, charitable donations, capital gains, and commercial activities (Ehrenberg 2000; Slaughter and Leslie 1997; Winston 1999). U.S. colleges are commonly grouped into four “sectors” based on their ownership and highest level of degree offered: 1) *public colleges* and universities are state owned and almost never offer less than four-year degrees, 2) *community colleges* are state owned and offer no higher than two-year degrees, 3) *private colleges* are non-profit and almost never offer less than

four-year degrees, and 4) *proprietary colleges* have for-profit ownership and vary in offering less than two-year certificates, two-year degrees, four-year degrees or combinations of all three. Figure 1 shows that full time equivalent enrollment grew substantially across all four sectors from 1997 to 2012. Degree programs, research, and other activities across all of these diverse public, non-profit, and for-profit organizations require transfers, investment, and borrowing transactions among an array of funders, suppliers, and consumers. Accordingly, any account of financialization in higher education must take account of its multiple levels and heterogeneous subsectors.

Figure 1: Enrollment by Sector



Source: IPEDS.

The rise of a market orientation in higher education parallels the decline in direct state appropriations for colleges and universities (Slaughter and Leslie, 1997). State appropriations and direct federal funding paid for the massive expansion of U.S. higher education from 1962 to 1972 when enrollment tripled from four million to twelve million students (Brown-Collier, 1998: 270; Rhoades, 1990: 194). But most federal funding for undergraduate education since the 1970s has been channeled to colleges through markets: the federal government has provided funding to students rather than to colleges. Students then choose an institution to which they will apply federal aid funds. For most public universities, both the share of direct funding coming from state governments and total

state funding per student have also declined since 1990 (Quinterno, 2012; Weerts et al., 2012).

Nearly all U.S. colleges and universities must generate commercial revenues to fund operations. But at selective private colleges and universities, education costs have tended to increase much faster than inflation because these schools compete primarily to maximize their prestige (Ehrenberg 2000; Winston 1999). As such, there has been little incentive for selective colleges to control costs, absent state intervention. Non-selective public colleges, however, have also increased tuition and room and board costs much faster than average incomes or state-funded grant aid in order to compensate for reductions in federal and state appropriations (Quinterno, 2012; Weerts et al., 2012). Proprietary colleges have meanwhile seized on federal student aid programs to increase their profits (Mettler 2014). Together, these dynamics have increased the costs which colleges pass on to students, even if colleges use state or charitable resources to subsidize degree programs.

Colleges of all types also make capital investments to remain competitive in these markets for commercial revenues. Research universities compete for federal and private research funding, and therefore invest in facilities such as research centers, joint research ventures, and hospitals (Geiger 2004, 2006; Powell and Owen-Smith 1998). Residential colleges invest in revenue-generating services and amenities like dormitories, dining halls, and college sports in order to develop new income streams as well as to attract students willing to pay higher tuition and fees (Armstrong and Hamilton 2013; Jacob, McCall, and Stange 2013; Slaughter and Leslie 1997). Although some states and municipalities issue public bonds on behalf of schools, especially community colleges, the majority of higher education organizations are responsible for acquiring most of their own capital to fund infrastructure, facilities, and other investments.

Different types of colleges and universities have different institutional origins and assume different organizational forms (Stevens, Armstrong, and Arum 2008), with large variations in assets, income, and sources of capital. Four-year *public colleges*, receive support from a mixture of sources: state appropriations, endowments, student tuition, research funding, and auxiliary services such as dormitories, sports programs, and hospitals. In 2012, the 331 public college systems in the United States enrolled well over six million or 41 percent of all enrolled, full-time equivalent (FTE) students.³ Four-year *private colleges* typically do not receive direct state funding, but otherwise compete for the same sources of support as public colleges. Private colleges enrolled over three million or 21 percent of FTE students at 1,641 systems or independent institutions. The two-year *community colleges*, receive state appropriations, but have very limited access to funding for research and auxiliary services. The 819 community college systems enrolled over 4 million or 27 percent of FTE students. *Proprietary colleges* lack access to many of the financial channels available to non-profit colleges, but do have access to federally-financed student loans and equity investment from the stock market or private equity. Proprietary colleges enrolled under two million or 10 percent of FTE students at

³ We aggregate all data for colleges up to the level of a college system when a college shares any financial functions like debt issuance with an administrative office or parent institution.

1,320 colleges. Together, these four sectors enrolled 99 percent of all FTE students at two-year or above colleges in 2012.⁴

Consistent with their organizational heterogeneity, colleges have access to different forms of capital with different types of financing costs, depending on their sector and the activities they seek to capitalize. Public, community, and private colleges can establish endowments, the income from which is exempt from taxation. They can also borrow using tax-exempt municipal bonds, notes, capital leases, and commercial paper. These funds pay for capital projects such as research facilities, hospitals, dormitories, and athletic centers. State or local governments can issue municipal bonds on behalf of public, community, or private colleges, but public and community colleges increasingly issue bonds directly. In either case, colleges must pay interest for such debts as a financing cost.

In contrast, proprietary colleges are not eligible to run tax-exempt endowment funds, or to raise capital through municipal bonds. Instead, proprietary colleges raise capital through equity markets and corporate borrowing. Proprietary colleges may invest this capital in capital projects, upgrades, or their intensive spending on advertising and marketing. Equity capital may entail either public stock offerings or investments by private equity firms. The financing cost of raising such capital is the profits that such proprietary colleges earn to satisfy their equity investors.

As we document below, financialization has occurred across all four subsectors, but in different ways and to varying extents. One commonality across all four sectors is a growing burden of educational expenditures on households. With aspirations for the higher wages and status promised by a college degree, students and their households have therefore increasingly relied on student loans to pay for rising college costs (Avery and Turner, 2012).

In addition to their other roles, colleges also function as financial intermediaries by connecting student borrowers and financial lenders. College financial aid offices arrange custom, individualized student aid and loan packages for households to purchase degree programs. In some cases, particularly in the for-profit sector, colleges have also acted as a private student loan lender to their own students (Consumer Financial Protection Bureau and U.S. Department of Education 2012). Student loan lending by colleges is rare, however, and we are unaware of any accessible data on the extent of lending by colleges. To the extent that colleges' pass their financial aid administration costs on to students, those costs would be included in the amount borrowed to students. As such, it is appropriate to maintain our focus on the overall amount of student loan borrowing and the cost of interest for these loans to households.

In borrowing to finance educational costs, households have increasingly borrowed directly from the federal government, underscoring the important role that the state can play in financialization as a lender itself. Between 1993 and 2010, households could borrow for higher education expenses using three main different types of loans: federally funded student loans, loans funded by private banks but guaranteed by the government Federal Family Education Loan (FFEL) program, and private student loans issued by banks without a federal guarantee. However, the U.S. Congress halted the origination of

⁴ We do not examine two-year private colleges because they enrolled just one percent of all FTE students in 2012. We do, however, include them in calculating enrollments and spending for all higher education at 2-year-and-above colleges.

privately funded FFEL loans in 2010, and lending by banks without a federal guarantee collapsed after the 2008 financial crisis. As a result, loans funded directly by the federal government have come to make up nearly 90 percent of new loan origination since 2010.

While the radical increase in student loan borrowing is well documented, existing scholarship has yet to account for how rising student loan interest and other higher education finance costs have figured in the overall trajectory of higher education costs. We provide findings to that effect below. Before presenting these findings, however, we will first explain how we selected appropriate measures in each case. We will also detail how we assembled comprehensive data for those measures.

Data and Measures

We gauge financialization in higher education by tracking the use of four key financial transactions for acquiring and investing capital: 1) investment returns from college endowments, 2) institutional borrowing by colleges, 3) equity investment in for-profit colleges, and 4) student loan borrowing by student households. Our data includes only those colleges that grant two-year degrees or higher and are eligible for funding under Title IV of the federal Higher Education Act.⁵ For this paper, we created a dataset for higher education financing costs and related organizational variables based on IPEDS historical data for all such institutions, which we have harmonized with other datasets.

Financial Revenues from Endowments

We use data on endowment asset values, returns, and funding of university operations for four-year public and non-profit institutions from both IPEDS (National Center for Education Statistics 2014) and NACUBO. As a professional organization for college business and finance officers, NACUBO has collected detailed data on endowment asset levels, investment returns and spending on college operations from endowment funds (2013). By harmonizing NACUBO data with IPEDS data, we were able to obtain data for endowment assets for all years from 2003 for 209 public systems and 871 private systems. This provides us with full endowment data for 68 percent of all undergrad-enrolling public systems. We have the same coverage for 69 percent of private systems. This is the most complete data set for endowment assets that we know of, and it is likely that many of the institutions for which we lack data do not actually operate endowments with substantial assets.

We also use NACUBO data on the amount of funding provided by endowments for spending on university operations and programs every year. This is the best available measure of the resources that endowments actually provide to colleges for higher education activities. Measures of allocations for operations from endowments is much better than the amount of annual investment returns which are extremely volatile, swinging from positive returns to net losses from one year to the next. This measure is also better than rolling multi-year averages of investment returns because it reflects the actual planning and options available for allocating resources. The number of public,

⁵ We limit our analysis to only these colleges because this paper relies heavily on data from the U.S. Department of Education's Integrated Post-Secondary Education Data System (IPEDS), which only collects information for Title IV eligible institutions. Accredited colleges that are less-than-two-year institutions enrolled less than 2 percent of the 21 million postsecondary students in the U.S. in 2012, and an even smaller share of FTE students.

undergraduate-enrolling systems for which we have data on spending from endowments ranges from 117 in 2003 to 132 in 2012. Such data for private systems ranges from 377 systems in 2003 to 434 in 2009. For the remaining public and private systems for which we have full endowment asset value data for all years, we estimate spending from endowments by using the average endowment spending rate for the institutions' sector for the given year. For further details, see the Data Appendix.

Interest Costs for Institutional Debts

For publics and non-profits, we calculated total annual gross costs of institutional debt using data from the Integrated Post-Secondary Education Data System. This is measured as total annual expenditure on interest payments. The number of public undergraduate-enrolling systems for which such data is available ranges from 182 or 59 percent of such systems in 2003 to 211 or 69 percent in 2012. It is not known what share of the remaining systems actually issue their own debt as opposed to receiving capital projects funding financed by borrowing or appropriations by state governments, local governments, tribal authorities, or by federal appropriations in the case of military institutions. The number of private undergraduate-enrolling systems for which such data is available ranges from 806 or 62 percent of such systems in 2003 to 850 or 65 percent in 2012. As in the case of endowments, we use IPEDS data on total spending by college to calculate spending on interest for institutional debts as a share of total spending by colleges.

Equity Investment in Proprietary Colleges

Within the for-profit subsector, equity financing is the primary means of acquiring capital investment. Because data on the distributions of profits to investors do not exist, we instead measure the operating surplus of those proprietary colleges which have received capital from stock offerings or private equity.⁶ We do so by taking the net revenues from operations and subtracting the costs of providing services (i.e. instructional spending), as well as general administrative/overhead costs, depreciation/amortization, and marketing costs. Operating profits are a useful proxy for the financial costs of using equity capital because they capture the difference between household and government expenditures on education on the one hand, and the costs incurred by the provider firms.

We must therefore also account for differences among for-profit colleges across ownership forms. This is the first paper to take this factor into account by using data collected by the authors in order to code the 7,000 plus Title IV eligible for-profit colleges from 1997 to 2013 by the ownership form of each college's parent company. In doing so, we are able to distinguish profit growth of for-profit colleges by closely held, publicly traded, and private equity financed firms. The aggregate figures reported below represent the sum of firm-level figures for 28 publicly traded higher education companies from 1997 to 2012,⁷ as well as 81 college firms owned by private equity firms during the

⁶ Since most for-profit colleges do not report any non-operating income, operating profit is synonymous with EBIT (earnings before interest and taxes).

⁷ These include: American Public Education; Apollo; Bridgepoint; Capella; Career Education Corp.; Corinthian; DeVry; EDMC; Grand Canyon; ITT; Kaplan (see note 12 below); Lincoln; National American

same period (company profits are only included during years when the company was publicly traded or owned by private equity).

By comparing operating margins reported in IPEDS with the income sheets of fiscal year-end 10-K statements for publicly traded firms, we determined that operating margins reported in IPEDS accurately reflect the actual operating margins of for-profit colleges. We therefore used IPEDS data to calculate comparable operating margin measures for all for-profit colleges by using revenue and expenditure figures reported in IPEDS.⁸

Interest Costs for Student Loans

For both federal and private student loans, we provide the first publicly available estimates of which we are aware for annual interest paid by loan type. In doing so, we estimate the annual financing costs for households to pay for higher education.

Interest payments on private student loans and Federal Family Education Loans (FFEL), the largest area of student loan origination prior to 2010, have never been tracked at any level to our knowledge. To address this inadequacy, we used data on annual student loan origination by loan type from the College Board (2013b), the annual interest rates for each student loan type, and average time in deference and in repayment for student loans overall to estimate annual interest payments for each student loan cohort by loan type. For each year, total student loan interest payments by loan type are the sum of payments across all cohorts, reported in constant 2012 dollars. The sources for the multiple data points used to estimate annual interest payments are discussed in detail in the online Data Appendix.

With the available data, student loan interest payments cannot be disaggregated by sector or college. Nor can interest payments across the higher education system be estimated well prior to 2003. The College Board, however, has published annual totals of all student loan origination since 1972 and totals for student loan origination by sector since 1993. Because loan origination levels have been the most decisive factor in student loan interest costs, we use the College Board data to assess earlier phases in student loan financialization than the transformation since 2003.

Again for the first time that we are aware, we calculate annual student loan borrowing by full-time freshmen by both sector *and* cross-classifications of endowment wealth levels since 2003 (the first year for which we have adequate endowment data). We were able to do so having harmonized data from IPEDS and NACUBO.

In the next section, we will describe the size and distribution in the increase of endowment funded expenditures as a share of all higher education expenditures. Then, we detail the size and distribution of increases in spending per student on the three principal financing costs for acquiring capital in the U.S. higher education system.

College Endowments and Financial Revenues

Endowments play an increasing role in financing U.S. higher education. Since the 1980s, more institutions have sought to build endowments and thereby assume the role of

University; Strayer; and Universal Technical. Most of these publicly traded firms operate multiple college brands.

⁸ We matched individual campus records in the IPEDS data by institutional affiliation, and subtracted total expenses from total current funds revenues.

financial investors. NACUBO reports show that just 148 undergraduate-enrolling systems reported operating endowments to NACUBO in 1977 and just 36 of them were public.⁹ By 2009, the number of public systems reporting endowments had grown to 158, with an increase to 501 for undergraduate-enrolling systems overall. Total endowment asset values reported by NACUBO increased ten-fold in 2012 constant dollars from \$39.8 billion in 1977 to a high of \$456 billion in 2007. From 2003 to 2012, when more detailed data are available, assets at public institutions doubled from \$61 to \$122 billion, while private college endowment assets grew by 49 percent from \$201 billion to \$300 billion. Together with fundraising, investment returns provided for net growth of both public and private endowments.

The Concentration of Endowment Assets

Although the use of endowments has diffused to less wealthy colleges, the growth in asset values has been concentrated disproportionately at the wealthiest institutions (Piketty 2014, 448). Among the nine undergraduate-enrolling private institutions that held more than one billion dollars in endowment assets in 1977, total endowment assets of more than quadrupled from \$17.2 billion in 1977 to \$77.8 billion in 2003, an average of 594 thousand dollars in assets per FTE student. Using more detailed data for years since 2003, we find that the exponential growth of endowment assets has continued among the wealthiest institutions. Table 1 shows endowment assets values and FTE enrollments of all students at undergraduate-enrolling public and private four-year systems by quantiles for endowment wealth in 2003, 2007, and 2012. The figures in the table are based only on those institutions that reported endowment asset values in every year, so the trends are not driven by compositional changes in the sample population. All quantiles in the table based on 2003 endowment asset values.

The increasingly skewed distribution of endowment assets is most apparent when considered on a per student basis. Public endowments assets per FTE student grew by 73 percent from \$7.6 thousand to \$18.8 thousand, while private college endowment assets per FTE student grew by 25 percent from \$71.3 thousand to \$89.5 thousand. The weighted mean endowment asset values per student at public systems between the 50th and 89th percentile was just \$13.7 thousand in 2012, only \$3.9 thousand higher than in 2003. In contrast, endowment asset values per student for the eight private institutions in the 99th percentile were \$886 thousand in 2012, \$178 thousand higher than 2003 levels. In 2012, these nine institutions controlled 27 percent of all endowment assets, but enrolled around one percent of FTE students attending public and private schools.

⁹ At present, the authors lack annual machine-readable data on endowments prior to 2003.

Table 1: Endowment Asset Measures by Sector and Percentiles for 2003 Endowment Wealth

		Public			Private		
		0-89th Percentile	90-98th Percentile	99th Percentile	0-89th Percentile	90-98th Percentile	99th Percentile
2003	Institutions	194	19	2	784	79	8
	Total Endowment Assets*	\$29.4 B	\$34.3 B	\$21.6 B	\$39.5 B	\$84.2 B	\$80.1 B
	Total Enrollment	3,748,328	1,220,786	330,124	1,604,254	513,737	113,118
	Endowment Assets Per Student	\$7,841	\$28,134	\$65,475	\$24,635	\$163,855	\$707,925
2007	Institutions	194	19	2	784	79	8
	Total Endowment Assets*	\$50.8 B	\$57.9 B	\$33.7 B	\$57.5 B	\$129.4 B	\$131.4 B
	Total Enrollment	3,941,821	1,307,892	355,761	1,763,605	549,666	118,225
	Endowment Assets Per Student	\$12,879	\$44,232	\$94,609	\$32,628	\$235,437	\$1,111,215
2012	Institutions	194	19	2	784	79	8
	Total Endowment Assets*	\$49.7 B	\$57.1 B	\$34. B	\$50.8 B	\$113. B	\$113.8 B
	Total Enrollment	4,400,779	1,468,703	400,452	1,958,368	597,768	128,440
	Endowment Assets Per Student	\$11,304	\$38,873	\$84,996	\$25,930	\$189,016	\$885,953

Source: IPEDS and NACUBO.

Note: Community-college-only systems, military institutions and institutions that do not enroll undergraduates are excluded. Percentiles are for institutions' endowment wealth in 2003 and are calculated for each sector separately. Endowment assets per student are total endowment assets for the quantile over total FTE students for the quantile.

*Total endowment assets are in billions.

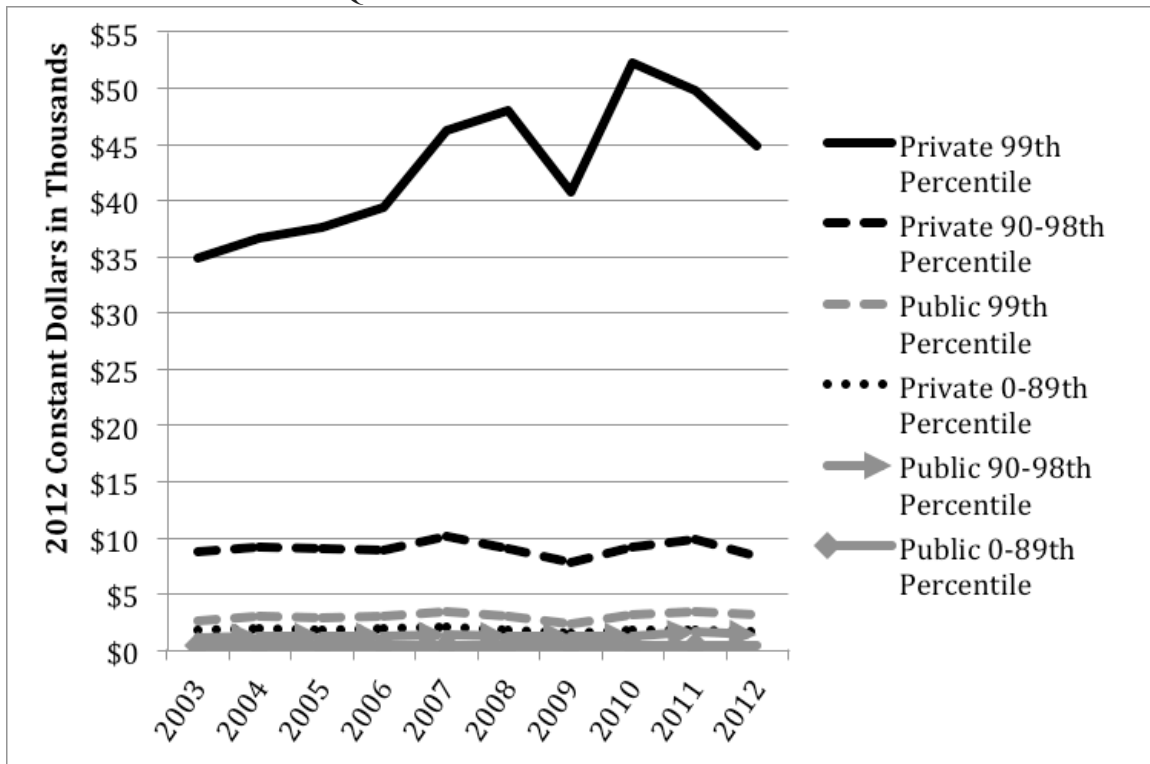
Endowment Returns and Spending on College Operations

As wealthy universities saw their investment assets grow, they also spent increasing amounts of investment-generated income to fund operations. Concretely, endowment investment returns provide resources for higher education through annual allocations from endowments for higher education activities. From 2003 to 2012, the mean percentage of endowment assets allocated for college and university operations ranged from 4 to 5 percent annually among all public systems and among private institutions below the 90th percentile of wealth. Average spending rates from endowments among institutions in the top two quantiles of private institutions ranged between 4.4 percent and 6.2 percent, increasing as endowments reported large losses from the global financial crisis in the 2009 fiscal and academic year.

Given the stratified distribution of financial assets documented above, we can expect that the reliance on financially-generated revenues would also be uneven. Figure 2 shows the actual spending per student from endowments on college operations by quantiles of 2003 endowment wealth. From 2003 to 2008, spending from endowments

per student at private universities in the 99th percentile increased from \$34.9 thousand to \$48.1 thousand. This represents an increase from 19.5 percent to 24.3 percent of those institutions' total expenditures. When the global financial crisis caused massive losses for these institutions in the fall of 2008, these colleges actually increased the share of endowment assets spent on operations. Spending from endowments by the top one percent of colleges reached a new high of \$52.3 thousand per FTE student in 2010.

Figure 2: Spending Per Student From Endowments on College Operations by Sector and 2003 Endowment Wealth Quantiles



Source: IPEDS and NACUBO.

Note: Community-college-only systems, military institutions and institutions that do not enroll undergraduates are excluded. Quantiles are for institutions' endowment wealth in 2003 and are calculated for each sector separately. Spending per student is the total spending for the quantile over the total FTE student enrollment per quantile.

In contrast, financially generated revenues played a very limited role in funding those institutions in the bottom 99 percent of public colleges and those in the bottom 90 percent of private institutions. These non-beneficiaries of endowments, however, together enrolled 7.9 million or 98 percent of FTE students at institutions with full endowment data. In short, revenues from financial channels played a growing role in funding higher education but this was confined to the wealthiest institutions.

College Institutional Debt and Interest Costs

Municipal bonds are the primary instrument by which public and private nonprofit colleges issue debt. Higher education bonds may be issued by states, by local governments, or – in an increasing number of cases – by higher education institutions

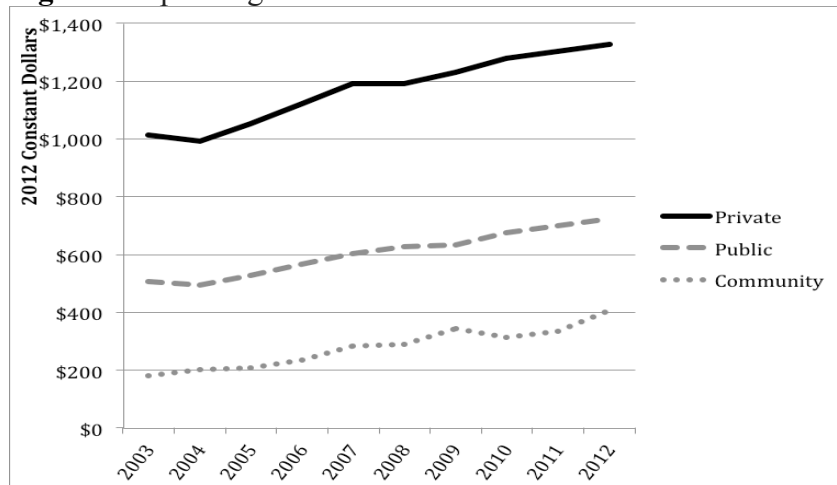
themselves. Money raised on bond markets customarily goes to finance capital improvements, including classroom construction, new dormitories, and physical plant maintenance. Bonds may be secured by pledges ranging from the full faith and credit of the issuing entity to more limited pledges of state or local appropriations, *ad valorem* property taxes, or revenues from projects built using proceeds from the bond.

Public, private, and community colleges have all taken on increasing amounts of municipal bond debt since at least 2003. Using IPEDS data, we find that public and community college debt more than doubled from \$73 billion to \$151 billion over the last decade.¹⁰ IPEDS does not report debt levels at private college before 2010, but in 2012 private college debt stood at \$95 billion. Interest payments on institutional debt are available since 2003 for all college types; these have nearly doubled from \$6 billion to \$11 billion.¹¹ Average spending on institutional debt rose faster than enrollments at community, public, and private colleges alike, and spending also grew across all levels of endowment wealth strata, although at much faster rates for the wealthiest one percent of private colleges.

The Financing Costs of Institutional Debt

Debt financing costs have grown across private, public, and community colleges. Figure 3 shows the weighted mean spending per student on interest payments by sector. From 2003 to 2012, public colleges' annual spending on interest payments per FTE student increased by 45 percent, from \$519 in 2003 to \$750 in 2012. Interest costs per student for private four-year colleges increased 23 percent, from \$1,047 to \$1,289. Interest costs per student at community colleges, however, increased to 76 percent, from \$222 to \$390.

Figure 3: Spending Per Student on Interest for Institutional Debt By Sector



Source: IPEDS.

Note: Spending per student is the total spending for the sector over the total FTE student enrollment for the sector.

¹⁰ Comparable historical numbers are not available from private colleges during this period. Data on debt for private colleges is only available beginning in 2010. In 2012 their debt amounted to an additional \$95 billion, up from \$91 billion in 2010.

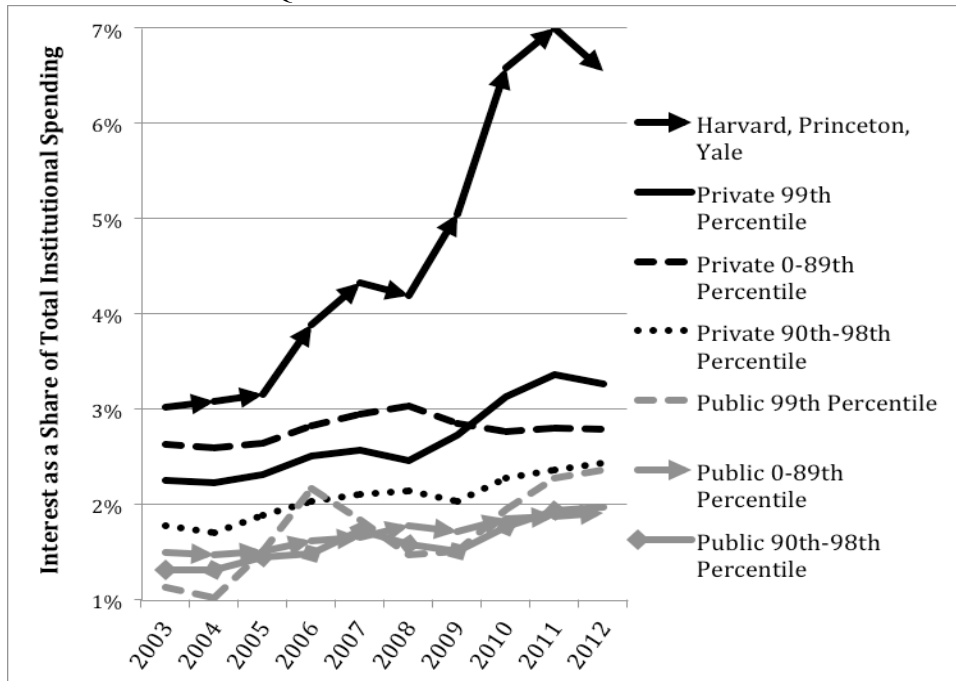
¹¹ Adequate data is not available to measure institutional debt prior to 2003.

These increases in spending on interest are primarily due to increased borrowing. They cannot be explained by increases in either interest rates or enrollment. According to all available measures, total interest payments have increased even as interest rates have fallen. Further, the growth of college and university debt payments has far outpaced growth in enrollments across all sectors

Institutional Debt and Endowment Assets

Figure 4 breaks down interest expenditures by endowment asset quantiles. Interest costs per student increased by substantially larger amounts at wealthier private and public institutions. Spending on interest costs as a share of all institutional spending also increased fastest at wealthy private and public institutions, doubling between 2003 and 2012 for the top percentile of both public and private institutions. This transformation was most dramatic at Harvard, Princeton, and Yale, the three wealthiest private institutions. Spending on interest at these three institutions increased from 3.0 percent of all spending in 2003 to 7.0 percent in 2011 before declining slightly in 2012 to 6.6 percent. The interest spending rate increased from 2.3 percent to 3.3 percent across all private institutions in the 99th percentile. The rate increased from 1.1 percent to 2.4 percent at the 99th percentile of public systems for endowment wealth. All other quantiles saw a positive but smaller change in this rate.

Figure 4: Interest as a Share of Total Institutional Spending by Sector and 2003 Endowment Wealth Quantiles



Source: IPEDS.

Notes: Military institutions and institutions that do not enroll undergraduates are excluded. Quantiles are for institutions' endowment wealth in 2003 and are calculated separately for each sector. Interest share is calculated as the total interest spending for the quantile over the total overall spending for the quantile.

The rapid growth in financing expenditures at the wealthiest institutions initially appears puzzling. These wealthy, high status institutions could have afforded to pay for capital projects with endowment assets, and enjoyed lower marginal borrowing costs. Endowment investments, however, yielded higher rates of return than prevailing interest rates for bond debt. So taking on debt to fund all kinds of capital projects is much cheaper than dipping into endowments or donor gifts (Congressional Budget Office 2010). By leveraging their strong credit ratings, wealthy institutions could use inexpensive debt to effectively maximize their overall financial returns.

Table 2 shows the net balance between funding for university operations from endowments and institutional debt interest costs. This net balance is calculated by simply subtracting each institution's total interest costs per student from its total spending on college operations from endowments per student. The 99th percentile of private institutions increased this net balance per student from \$30.8 thousand in 2003 to a \$37.8 thousand in 2012, peaking at \$45.8 thousand in 2010. This net balance declined for all other quantiles over the full period.¹²

Table 2: Per Student Balance of Spending from Endowments and Interest Costs For Institutional Debts

	Public			Private		
	Public 0-89th Percentile	Public 90-98th Percentile	Public 99th Percentile	Private 0-89th Percentile	Private 90-98th Percentile	Private 99th Percentile
2003	-\$63	\$718	\$1,259	\$1,100	\$6,900	\$30,887
2004	-\$66	\$826	\$1,705	\$1,279	\$7,385	\$32,629
2005	-\$71	\$735	\$1,419	\$1,195	\$6,998	\$33,361
2006	-\$58	\$668	\$1,379	\$1,227	\$6,861	\$34,642
2007	-\$19	\$753	\$1,711	\$1,379	\$7,837	\$41,302
2008	-\$77	\$707	\$1,386	\$1,085	\$6,718	\$43,221
2009	-\$193	\$412	\$821	\$728	\$5,398	\$35,061
2010	-\$159	\$451	\$1,289	\$1,107	\$6,987	\$45,770
2011	-\$132	\$650	\$1,275	\$1,178	\$7,622	\$42,856
2012	-\$192	\$415	\$853	\$904	\$5,968	\$37,846

Source: IPEDS and NACUBO.

Note: Community-college-only systems, military institutions and institutions that do not enroll undergraduates are excluded. Quantiles are for institutions' 2003 endowment wealth and are calculated for each sector separately. Per student balance of spending is the total balance of endowment spending minus interest costs for the quantile over total FTE enrollment for the quantile.

¹² The net balance for 90th to 98th percentile of private institutions declined from \$7,212 to \$6,278. The net balance for public institutions above the 90th percentile and private institutions in the 50th to 89th percentiles all declined by at least 22.5 percent but remained positive, having started in 2003 at around \$1,000 per student. The net balance between funding from endowments and interest spending was negative throughout the period for the bottom 90 percent of public systems and the bottom 50 percent of private institutions, declining to less than negative \$209 for the former and negative \$139 for the latter.

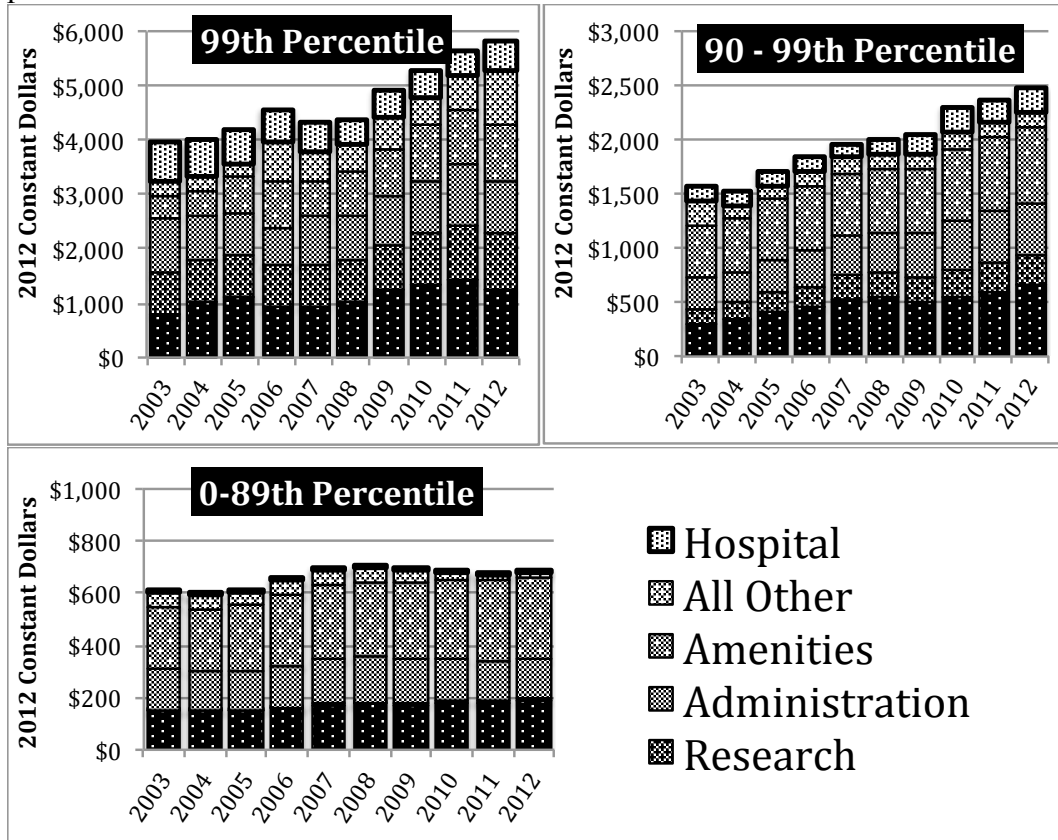
Wealthier institutions tended to spread borrowing more widely across multiple purposes including prestige-boosting investments in instruction and research. Among less wealthy private institutions, however, we can see that the largest and fastest increases in institutional debt costs were for capital investments in the financial reporting categories of auxiliary and student services that include student amenities. Such amenities include dormitories, cafeterias, stadiums, college athletics, and recreation centers.¹³ Figure 5 shows that interest costs for the category including amenities rose faster and more consistently than interest costs for any other purposes at private institutions in the bottom 90 percent of endowment wealth. Interest costs for amenities as a share of all interest costs increased from 36.2 percent to 44.3 percent at institutions in the former quantile and from 41.7 to 46.0 percent for the latter quantile.¹⁴ Comparable data is not available for public systems prior to 2010. The distribution of interest spending by purpose, however, is comparable at public institutions in those years for which data is available.

The high level of reported interest spending on auxiliary services indicates that less wealthy public and private colleges are using institutional debt towards maximizing commercial revenues, while at the wealthiest institutions it was oriented toward maximizing financial revenues. Scholars have argued that colleges expanded amenities in order to boost commercial revenue by attracting more students willing to pay higher tuition and fees (Jacob, McCall, and Stange 2013). In 2003, Clare Cotton, president of the Association of Independent Colleges and Universities in Massachusetts at the time, told the *New York Times*, "it's exactly the psychology of an arms race. From the outside it seems totally crazy, but from the inside it feels necessary and compelling" (Winter 2003). As we see in Figure 5, borrowing for capital investments offered a potentially potent resource for staying competitive in the college amenities arms race.

¹³ We adopt the same approach here as Jacob et. al. in grouping auxiliary services and student services together as the categories that include amenities spending. The overwhelming majority of spending on interest for these categories is for auxiliary services. It should be noted that auxiliary services can include activities that are not generally considered as amenities, such as research parks. The large shares of interest spending in auxiliary services at less wealthy public and private institutions, however, suggests that the type of amenities we discuss are at greater play than research park enterprises. Student services, on the other hand, can also include spending on improved student academic and career counseling. As such, these categories should be treated with some skepticism. In any case, the high level of reported interest spending on auxiliary services indicates that less wealthy public and private institutions are using institutional debt toward maximizing commercial revenues, while at the wealthiest institutions it was oriented toward maximizing financial revenues.

¹⁴ For public systems, data is only available to disaggregate interest spending by purpose from 2010 to 2012. As such, we cannot assess trends in interest spending over time in the case of public institutions. In all years for which data is available, however, interest costs for amenities made up the largest area of average interest costs for public systems in all years across all of the quantiles we use for endowment wealth. The average share of interest spending for amenities purposes at public systems ranged from 46.8 percent to 48.9 percent for the 99th percentile, from 52.7 to 54.4 percent for the 90th to 98th percentiles, and from 35.2 to 36.2 percent for the bottom 90 percentiles.

Figure 5: Private institutions' spending per student on interest by purpose of debt and percentiles for endowment wealth



Source: IPEDS.

Note: Quantiles are for institutions' 2003 endowment wealth. Spending per student is the total spending for the quantile over the total FTE student enrollment per quantile.

Proprietary Colleges and Profits as the Cost of Equity Investment

The above sections showed how endowment revenues and interest costs have assumed a greater role within the traditional public and non-profit subsectors. In this section, we focus on the rapid growth of investor-owned, for-profit colleges as a third form of financialization within higher education. Whereas public and non-profit colleges rely on credit and endowment capital, proprietary colleges principally rely on a different type of financing: equity capital from investors. The operating profits generated by these institutions to satisfy equity investors can thus be thought of as the financing cost for proprietary colleges' capitalization. In this section, we track the for-profit subsector's contribution to higher education financialization by estimating the costs of financing higher education with investors' equity. Specifically, we chart annual net operating profits among those institutions owned by publicly traded and private equity firms.

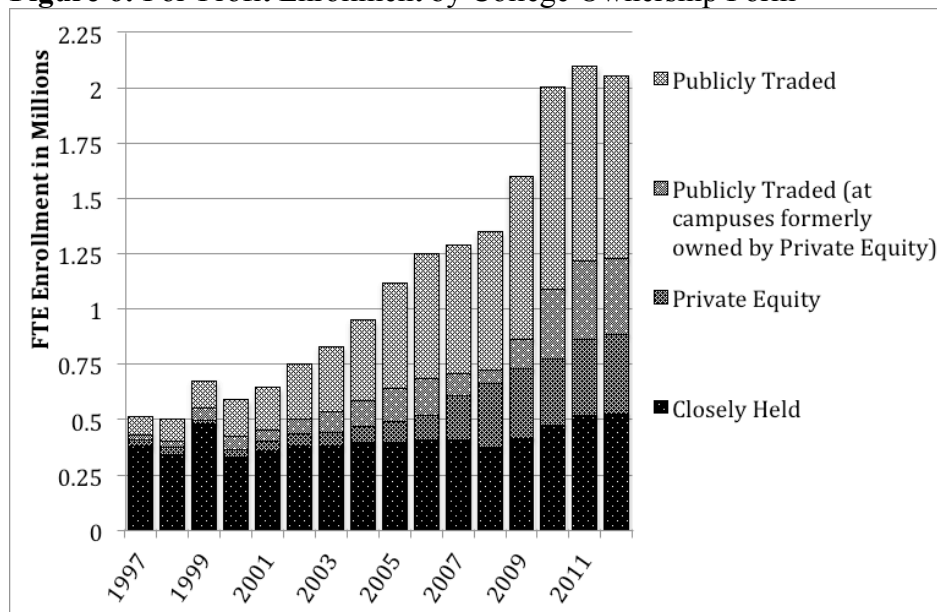
Equity Capital and Proprietary College Growth

As we saw in Section 2.2 and Figure 1, for-profit colleges became the fastest growing type of higher education institution at the end of the 1990s. IPEDS data shows that enrollments at proprietary colleges expanded by 306.5 percent in 13 years from

429,183 in 2000 to 1.7 million in 2012. For comparison, the public college sector had the next highest growth rate, increasing by 31.0 percent from 2000 to 2012.

Small, privately-held proprietary colleges long filled a niche role within the higher education ecology. Traditionally these firms specialized in one or two-year technical and vocational-training programs. They were typically owned and operated locally. In 1990 there was not a single publicly traded higher education firm. During the 1990s, however, proprietary colleges attracted growing interest from private financiers. The Apollo Group, which owns the University of Phoenix, first went public in 1991, followed by DeVry in 1994 and Educational Management Corporation in 1996. Soon, corporate holding companies and private equity firms began entering the higher education sector. They often did this by assuming control of existing proprietary or nonprofit schools that already possessed an accreditation.

Figure 6: For-Profit Enrollment by College Ownership Form



Source: Original database by authors combining data from IPEDS, ThomsonOne, unpublished Senate HELP Committee documents, firm 10-k statements, and college online course catalogs.

From 2003 to 2012, the number of for-profit college companies owned by private equity firms increased from 18 to 61 and the number of publicly traded for-profit college companies increased from 10 to 21. The number of campuses owned by private equity companies accordingly increased from 84 to 195 and the number of campuses owned by publicly traded for-profit college companies increased from 237 to 536. Figure 6 shows that the radical growth of the for-profit sector was driven almost exclusively by publicly traded firms and private firms financed by private equity. Enrollment at closely held college firms grew by just 76 percent from 193,146 in 2000 to 339,843 in 2012. Enrollment at private equity financed college firms, however, grew by 1,035 percent from 24,492 in 2000 to 277,979 in 2012. Enrollment at publicly traded college firms increased by 433 percent from 211,545 in 2000 to 1.1 million in 2012. (A portion of the publicly traded growth was driven by previously private equity financed college firms

that went public). By 2011, colleges owned by publicly traded or private equity firms together accounted for over 75 percent of enrollments at proprietary colleges.

Investors instituted a scale-based, rapid-growth business model that sought to corral the maximum number of tuition payers through the doors (or online portals) while maintaining minimal marginal costs. The case of Education Management Corporation (EDMC) provides an illustrative example of this transformation (U.S. Senate Committee on Health Education Labor and Pensions 2012). EDMC was founded in 1962, and had long been reputed as one of the higher quality proprietary college companies in an industry plagued by questionable practices. In 2006, EDMC was taken over by a private equity consortium led by Goldman Sachs along with Providence Capital Partners and Leeds Capital. Goldman and its partners installed new executives who promptly reallocated resources from instruction to marketing and recruitment. Total enrollment across EDMC's brands, which include Argosy University, South University, Brown Mackie College, and the Arts Institutes, more than doubled between 2006 and 2010. By 2011, colleges in which Goldman Sachs was the dominant owner enrolled over 150,000 students, captured over \$486 million in federal Pell Grant funds, and netted an operating profit of over \$501 million.¹⁵ As we will discuss later, however, enrollments at for-profits have declined since 2011 amid reregulation, lawsuits, and a political backlash against perceived predatory practices.

Measuring Proprietary College Profits as the Cost of Equity Financing

Below we estimate the cost of using equity capital to finance higher education expansion by charting the total annual net operating profits among those institutions owned by publicly traded and private equity firms.

Figure 7 shows the proprietary college net annual operating profits from 2003 to 2012, expressed in constant (base 2012) dollars. Over the decade, the size of annual net operating profits increased five-fold from over one billion dollars in 2003 to just over five billion dollars in 2011 before falling back to three billion dollars in 2012 as enrollments failed to keep pace with expanded capacity.

An analysis of income data reveals that the proprietary college industry was characterized by very high margins: gross margins among the publicly traded firms in this study averaged approximately 55 percent during the period under study.¹⁶ This is significantly higher than the 33 percent average gross margin across 99 major industries in the U.S. (standard deviation: 14 percent; median: 31 percent).¹⁷

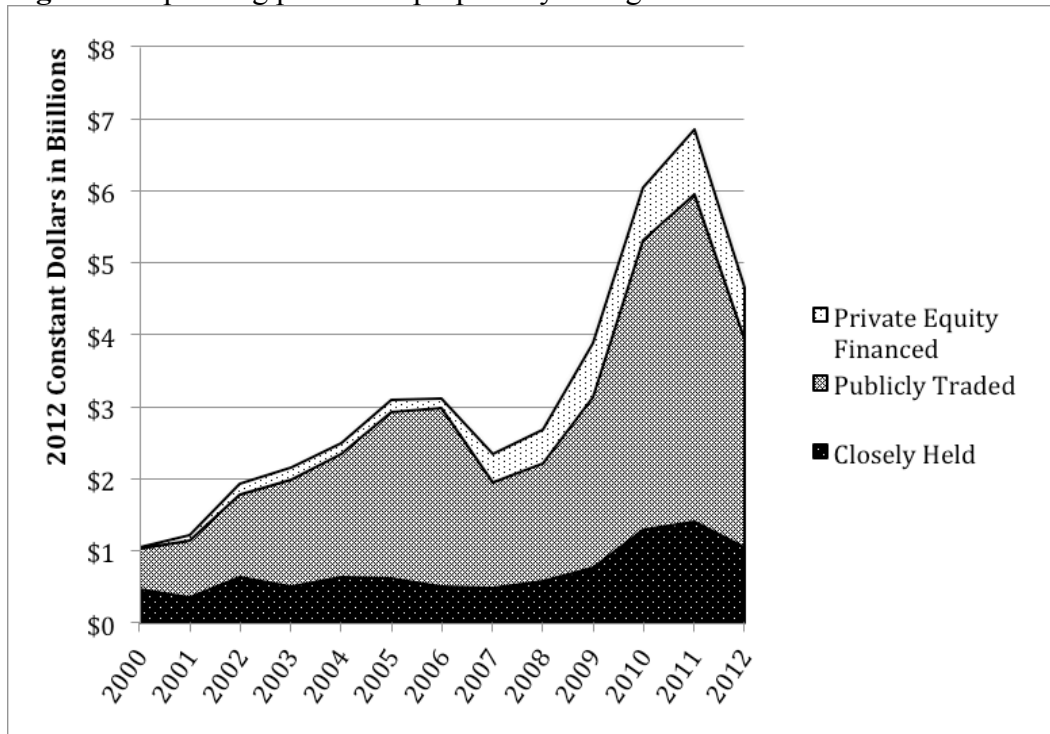
It is worth noting that the decline in total profits among proprietary schools after 2011 resulted from concerted policy shifts. The entire sector contracted after the Obama administration tightened rules for proprietary schools to recruit and enroll federal funding recipients. The resulting decline in the share of higher education spending that goes to profits for equity investors represents a real reversal in this form of financialization. We discuss the role of policy further in the discussion section below.

¹⁵ See EDMC 2012 Annual Report. The private equity consortium reoffered EDMC on the NASDAQ stock exchange in 2009. As of September 2013 Goldman continued to hold a 43 percent ownership stake.

¹⁶ Author calculations using 10-K income statements for publicly traded for-profit colleges.

¹⁷ Authors' calculation using industry average margins dataset acquired from Aswath Damodaran (<http://pages.stern.nyu.edu/~adamodar/>). Gross margins are calculated as EBITDA SG&A / Sales.

Figure 7: Operating profits for proprietary colleges



Source: Original database by author combining data from IPEDS, ThomsonOne, unpublished Senate HELP Committee documents, firm 10-k statements, and college online course catalogs.

Student Loan Debt and Interest Payments

As colleges increased tuition, room, and board costs, they increasingly assumed the role of student loan broker to arrange financing for households to pay for these costs. As discussed at the end of section 2, the federal government increasingly acted as the direct lender in these transactions. On the other side of these loan transactions, households increasingly took on the role of borrower. As a result, household spending on student loan interest payments increased more persistently than for-profit financing costs or any of the other higher education financing costs that we have examined. In this section, we explain our estimation that household spending on interest on student loans increased from \$14 billion in 2003 to \$34 billion in 2012. As a result, we estimate that student loan interest payments increased from 14 percent to 20 percent as a share of all household spending on higher education.¹⁸

Increased Student Loan Borrowing as the Driver of Student Loan Interest Spending

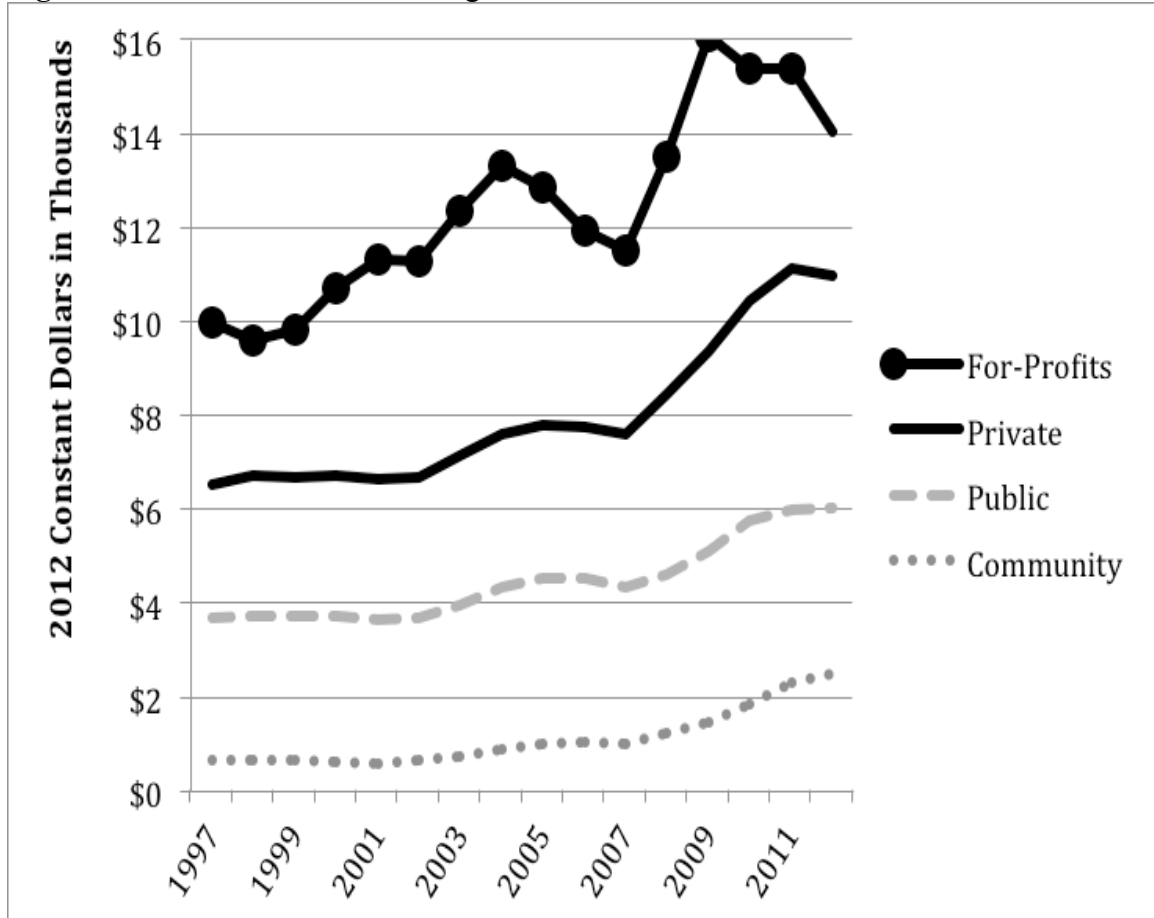
Figure 8 shows that student loan borrowing per FTE student¹⁹ increased across all sectors after 2002. Average borrowing began to increase two years earlier at for-profits,

¹⁸ We estimate total household spending on higher education by adding total household spending on student loan interest to total household spending on tuition and fees from IPEDS. We do not include spending on room and board in this estimate because we lack adequate data.

¹⁹ These figures are per FTE student, not per borrower, because aggregate borrowing amounts are available by sector for the full time series from the College Board but aggregate numbers of borrowers are not.

however, and borrowing increased most at for-profits and non-profit private colleges. Increased borrowing at for-profits and non-profit privates widened a disparity over public institutions.

Figure 8: Annual Student Loan Origination Per FTE Student

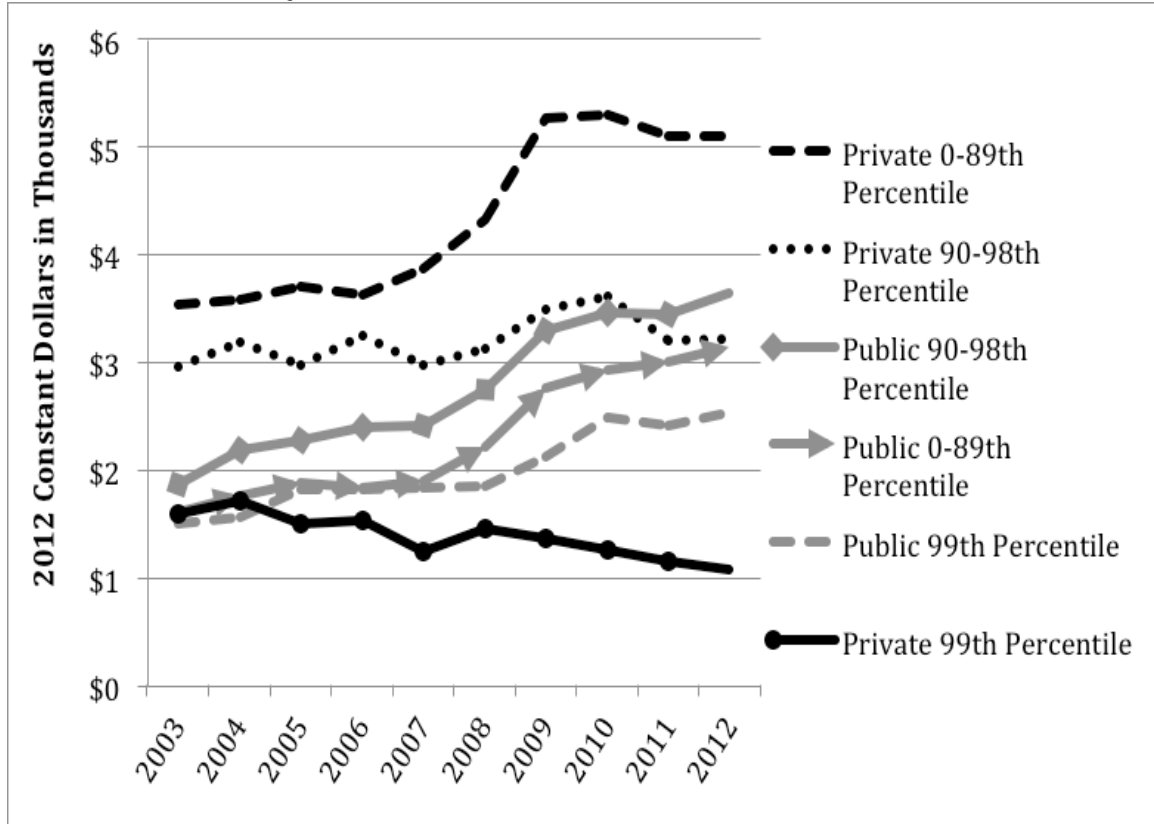


Source: College Board Trends in Student Aid Loan Origination Data and IPEDS Enrollment Data. Loan origination per student is the total loan origination for the given sector over the total FTE student enrollment sector.

For the years since 2003, we can disaggregate average borrowing per full time freshmen student (this IPEDS measure does not include borrowing by parents which is included in Figure 8) by quantiles for public and private colleges’ endowment wealth (see Figure 9). When we do so, we see a widening gap between low student loan burdens at the wealthiest private institutions and greater borrowing across other institutions. Average annual freshman borrowing actually declined at private colleges in the 99th percentile for endowment wealth, from \$1601 per student (not borrower) in 2003 to \$1082 in 2012. The highest levels of student loan borrowing occurred in the bottom 90 percent of private institutions where average borrowing per student increased from under \$3549 thousand to more than \$5110. The increase in borrowing was more uniform across public systems where average borrowing increased across all endowment wealth

quantiles but also increased most at systems in the bottom 89 percent for endowment wealth.

Figure 9: Borrowing Per Full-Time Freshman Bachelor Degree Student By Sector and Endowment Wealth Quantiles*



Source: IPEDS.

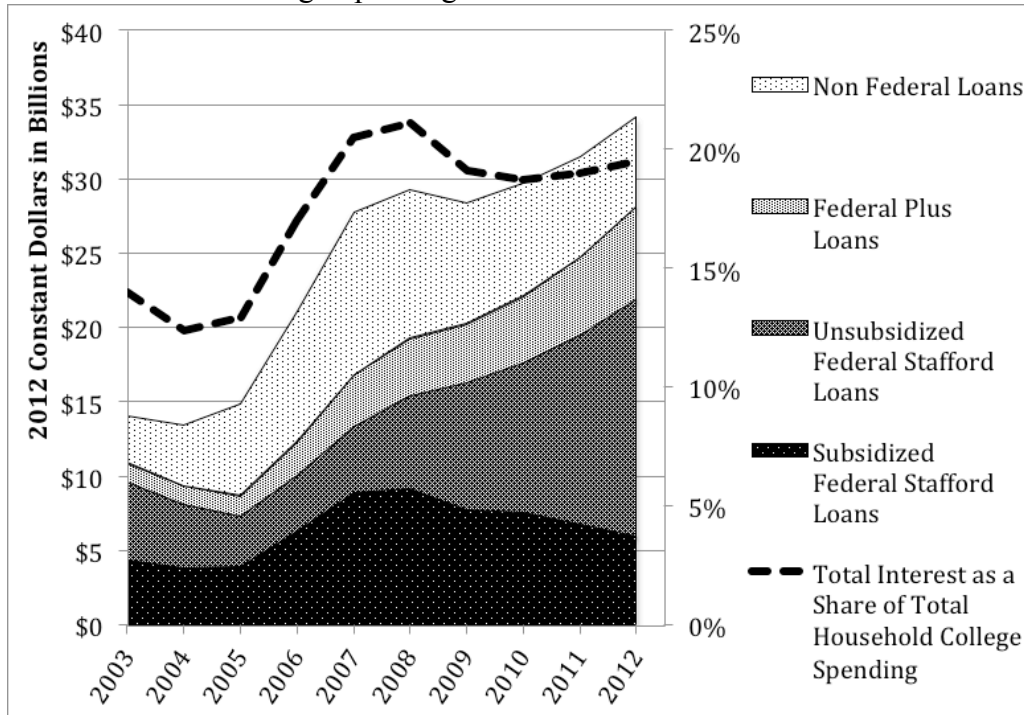
*Note: *Unlike in Figure 8, borrowing by students' parents is not included here. Community-college-only systems, military institutions and institutions that do not enroll undergraduates are excluded. Quantiles are for institutions' 2003 endowment wealth and are calculated for each sector separately. Borrowing per full-time freshman is the total borrowing by full-time freshmen for the quantile over total full-time freshmen enrollment the quantile.*

Increasing Student Loan Interest Spending

These dramatic increases in borrowing have led to large increases in household spending on interest for student loans. Figure 10 shows the total annual estimated interest costs borne by households for student loans, broken down by loan type. Our analysis includes all federal loans and non-federal loans except for the small federal Perkins loan program. Shifts in the mix of loan costs over time reflect changes in their relative interest rates, as well as changes in their relative volume of origination.²⁰

²⁰ The share of payments due to subsidized Stafford loans declined after 2008 because the federal government reduced the interest rate for these loans. So even though origination of subsidized Stafford loans continued to grow, total annual interest costs for these loans actually decreased. Interest rates for

Figure 10: Interest Payments on Student Loans By Loan Type and Interest as a Share of Total Household College Spending



Source: Author calculations using origination data from the College Board, estimates of time in repayment period from the Department of Education, private student loan interest rate estimates from the Consumer Financial Protection Bureau and interest rate data from the Department of Education published by FinAid.org. Total household spending was estimated by summing total household spending on tuition and student loan interest and does not include household spending on other college expenses such as housing. See Data Appendix for a methodological explanation of the calculations.

The dotted line in Figure 10 shows that spending on interest increased from 14 percent to 20 percent as a share of total household spending on higher education.²¹ The radical jump in interest as a share of household spending occurred entirely from 2004 to 2007 and reflects a lagged increase in loan repayment after the counter cyclical surge in student loan borrowing during the 2001 recession. Repayment of federal student loans, however, does not begin until the end of a sixth month grace period after higher education enrollment ends for a borrower. As such, borrowers who are just entering a four-year degree program may go four years or more before entering repayment. Because our estimates end in 2012, they do not include the surge in student loan interest payments that we should expect from surges in borrowing since 2007.

The case of federal student loans reinforces how examining financing costs can reveal forms of financialization that are invisible using profit-accumulating measures. The federal government terminated the Federal Family Education Loan (FFEL) loan program for guaranteeing federal loans that private banks fund in exchange for profits on

other federal loan types remained steady for new cohorts while the total origination of all federal loan types increased in real dollars.

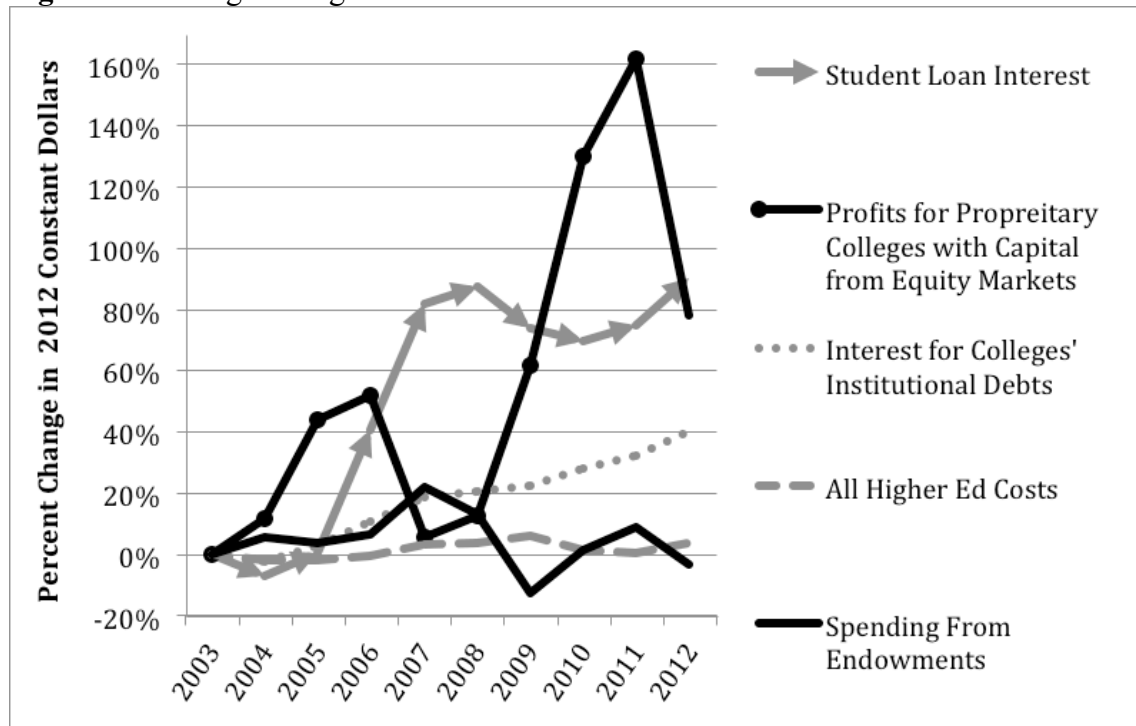
²¹ Ibid.

interest. So while outstanding FFEL loan debt remained at \$423 billion in 2013, no new FFEL loans have been issued since 2010. In addition, private loan issuance by banks without federal backing collapsed after the 2008 financial crisis to just \$6 billion a year or less than 5 percent of all new student loan origination (Consumer Financial Protection Bureau and U.S. Department of Education, 2012: 3). Instead, student loans funded directly by the federal government have become overwhelmingly the largest source of lending with more than \$617 billion in outstanding loans by 2013 when overall student debt topped \$1 trillion (Congressional Budget Office 2013). Yet neither federal student loan financing costs nor federal government revenue from student loans appear in traditional measures of profit accumulation from financial transactions.

Quantifying the Costs of Higher Education Financialization

This article has shown that financialization has been multifaceted for U.S. higher education as a hybrid field of social provision that includes for-profit, non-profit, and public organizations. We have thus far detailed how revenue and costs from financial transactions tended to change according to the ownership forms and wealth strata of the colleges involved. Now we can quantify the total economic costs of increasing reliance on all four of the key higher education financial transactions together. We can also compare the aggregate returns and costs from each transaction type. In doing so, we will show that rising finance costs far surpassed increases in financial returns. We also find that the costs of financial transactions increased much more for households than for colleges.

Figure 11: Change in Higher Education Costs Per FTE Student since 2003



Source: Author calculations using data from IPEDS, income sheets for publicly traded for-profit colleges, the College Board, Department of Education, Consumer Financial Protection Bureau, and FinAid.org. See text and Data Appendix for further explanation.

Figure 11 compares the relative growth in total real per student expenditure with growth in each of the three costs of financial transactions that we discussed above. From 2003 to 2012 these costs increased on a per student basis while overall spending on higher education per student remained flat. Together, annual higher education financing costs totaled increased from \$21 to \$48 billion. Financing costs across all years totaled just over \$350 billion. While this shift was large, it was neither uniform nor linear for all three of the principal higher education financing costs.

Interest spending per student for colleges' institutional borrowing increased steadily and throughout public, private, and community colleges. When measured per student for all FTE students, these costs increased by 40 percent from \$476 in 2003 to \$668 in 2012. (This measurement differs slightly from those reported in section 5 which measured per student increases by enrollment at only those colleges reporting institutional interest costs. See data appendix for further details). In contrast, profits per student for proprietary colleges financed with equity capital increased radically by 162 percent from 2003 to 2011 before collapsing (again, we measure this cost per student for all U.S. students, not just those enrolled at proprietary colleges – this represents how the relative growth in scale of the proprietary sector affects overall costs for the entire higher education system). Average education loan interest costs per student saw the largest persistent increase of 90 percent from 2003 to 2012.

The turn to finance also provided growing resources for higher education through returns on endowment investments. Annual spending from endowments increased from \$16 to \$20 billion. We estimate that colleges' spent \$188 billion from endowment-generated revenue during our period.²² However, this figure is considerably lower than the \$350 billion in financing costs that we have estimated. Moreover, financial revenues from endowments have been concentrated in a small fraction of the overall higher education system. As a result, spending from endowments remained essentially flat as a share of all university spending at 4 percent. In contrast, the costs of the three other financial transactions increased from 5 to 9 percent as a share of all higher education expenditures.

The above comparisons show that financialization has manifested itself more broadly in the increasing share of higher education expenditures that go to financing costs, which increased from 5 to 9 percent. In a sense, one could say that colleges benefited most broadly from financialization through the use of student loans to pay for increasing tuition and student services costs. This use of financial transactions, however, came at a radically increased expense to households. In some instances, this offset state funding reductions. In comparison to financing arrangements that rely more on direct state appropriations funded by tax revenue, however, it is fair to say that financialization drained more resources from higher education than it generated for the sector.

Conclusion

Our study holds implications for both economic sociology and the sociology of higher education. By adopting new conceptualizations and measurement strategies, we

²² This number is higher than the sum of endowment spending reported earlier because we include here estimated spending based on average annual endowment spending rates by sector for those systems and institutions that did not report annual spending rates.

bridge accumulation-based perspectives (Arrighi, 1994; Krippner, 2011) with the need to consider the different financial transaction roles assumed by the broader array of actors who populate hybrid arenas of public-private social provision (van der Zwan 2014). Using this framework, we have documented the growing role of finance across the heterogeneous subsectors of U.S. higher education: Traditional public and non-profit educational providers have come to rely more heavily on financially-mediated flows of investment revenue and debt-funded capital. Meanwhile, equity capital fueled the growth of an explicitly financialized subsector of for-profit providers. Finally, educational consumers have been saddled with growing interest payments as debt balances grew.

Although financiers have profited enormously from the increasing use of credit instruments, the financialization of higher education cannot be reduced to profit accumulation or rent extraction. Nor is the process of financialization reducible to privatization of public provision. In fact the state has been one of the main participants in the transformation we describe. Before 2010, the majority of student loans were privately financed at least in part. Now, the federal government directly finances and administers more than 90 percent of U.S. student loans, and it is the largest recipient of interest income from student loan payments. It is a testimony to the active role of the state in financialization that the U.S. Department of Education has been one of the fastest growing consumer creditors in the U.S. since 2010. This transformation of student lending underscores the growing role of financial funding mechanisms even for redistributive social policies (Krippner 2011; Quinn 2012).

Our findings raise many questions and open several lines of future research. First, we have deliberately said little about the *causes* of the trends documented above. Why have colleges increasingly taken on the roles of borrower, investor, or both? Organizational studies might examine how the adoption of financialized practices and strategies is embedded in particular networks, professional projects, and conceptions of control. For instance, we have some evidence from case studies that financialized strategies were transmitted through networks and board interlocks between investment banks, at least at the University of California (Eaton et al., 2013). Future work might probe the migration of personnel from financial firms to other fields.

Our findings also raise a variety of further questions about the broader *consequences* of financialization for households, universities, and social stratification. Studies suggest that financialization in the private sector has shifted organizational power and governance, heightened stratification, and allocated resources away from productive investments (Goldstein 2012; Lin and Tomaskovic-Devey 2013; Orhangazi 2008; Tomaskovic-Devey and Lin 2011). To what extent have comparable consequences been felt in higher education? How does financialization affect educational outcomes and educational stratification, either by reorienting organizational priorities or redistributing resources?

We might expect the effects to be especially pronounced within the for-profit sector, where financialization entails direct organizational control over educational providers. As Wall Street took over for-profits, investors demanded higher returns, which shifted resources from instruction to recruitment (U.S. Senate Committee on Health Education Labor and Pensions 2012). We have also shown that students' average student loan borrowing increased fastest and to the highest levels at for-profits. Yet for-profits and the poorest public institutions disproportionately enroll minorities and students from

lower social class backgrounds. Together, these aggregate facts suggest that the financialization of higher education may play a significant direct role in exacerbating educational and economic stratification. Future research should explore this possibility using household-level data and plausible counter-factual conditions.

We can also expect significant (though perhaps less dramatic) effects among public and non-profit institutions. As shown above, borrowed capital has disproportionately funded investments in non-instructional commercial activities, including amenities. Scholars have tended to explain the trend toward amenities spending as a marketing tactic to attract tuition-paying students (Armstrong and Hamilton 2013; Jacob, McCall, and Stange 2013). However, the shifting relationship between universities and financial markets may also play an independent role. Resource-dependence theory suggests that the power of financial managers and experts within universities should increase as their organizations become more dependent on capital markets. The need to appease capital market audiences such as ratings agencies pushes organizations to have to focus more on revenues in order to continue accessing low-cost capital. Moody's ratings methodology, for example, accounts for a higher education institution's "pricing power" in terms of high student demand and statutory flexibility to increase tuition, its "operational performance" in terms of the diversity of its revenue streams and control over expenditures on faculty, and its "capital investment" in facilities that draw in additional revenues (Moody's Investor Service 2011). Increasing dependence on financial markets may thereby bias resources toward revenue-generating commercial projects and increased student loan origination. In this way, bond markets promote organizational behaviors that may be at odds with the goals of cost-efficient social provision in areas like higher education.

A related question is to what extent funding higher education through financial transactions may exacerbate stratification in resources across institutions (Brewer, Eide, and Ehrenberg 1999; Muller and Shavit 1998; but for a word of caution see Gerber and Cheung 2008)? Our findings imply that wealthy institutions seized on the opportunities provided by financialization by using debt to effectively bolster investment returns from endowments. In contrast, poorer public and private institutions were not in a position to offset increasing interest costs from institutional debts with increased financial returns from endowments.

Finally, there is a need for cross-national comparative research on the scope and consequences of financialization in higher education. More than 70 countries are known to have student loan programs. In contrast to the U.S., however, most nations have programs that are significantly subsidized to offer low or zero interest rates and multiple provisions for avoiding excessive repayment burdens (Shen and Ziderman 2009). Under these conditions, student loan programs may help to increase college attainment by covering tuition or the cost of living without exposing students to risky credit obligations that may exceed future income benefits. This contrast suggests that cross-national studies will offer insights to how particular forms of financial transformations, whether through student loans or capital financing for educational institutions, may help or hinder educational policy objectives.

CHAPTER 3:

Shareholder Value Ownership and the Transformation of U.S. For-Profit Colleges

From 1997 to 2011, student enrollment more than quadrupled at U.S. for-profit colleges offering at least a 2-year degree, from under 400,000 to nearly 1.9 million. In the wake of this massive growth, Deming, Goldin, and Katz (2012) argue that we have two contradictory accounts of for-profit colleges as either “nimble critters” or “agile predators.” The “nimble critters” perspective sees for-profits as filling educational gaps for the underserved (Breneman, Pusser, and Turner 2006; Cellini 2010; Hentschke, Lechuga, and Tierney 2010). The “agile predators” view argues that for-profits suck up expanded federal student loans and grants for low-income students but provide inadequate student support (Gelbgiser 2015; Looney and Yannelis 2015; Mettler 2014). Both lines of research, however, have mostly overlooked how the dominant organizational form of for-profit colleges may have changed during the boom.²³

Indeed, I argue that the spread of shareholder value ideology and practices to the for-profit college sector led to profound organizational transformations during this period. Change occurred as private equity and publicly traded firms increasingly acquired and started new colleges following the expansion of federal student loans in the early 1990s (Avery and Turner 2012). Under private equity and publicly traded firms, shareholder value provided a strategic framework and capital resources for colleges to implement a new industrial-scale business model that conforms most with the agile predators account. This new model radically increased enrollments by coupling large outlays for marketing and recruitment with aggressive cost cutting in the areas of instruction and student support (Deming, Goldin, and Katz 2012, 148; Steinerman, Volshteyn, and McGarret 2011). Excessive enrollment of underprepared students and over-aggressive cost cutting led to exceptionally poor graduation and student loan repayment rates.

My argument stresses the concrete importance of ownership structures in the spread of shareholder value and organizational transformations in far-reaching sectors of the economy. Since the emergence of shareholder value in the 1980s, economic and organizational sociologists have devoted considerable study to such transformations. As an ideology and unified set of practices, shareholder value posits that businesses should be managed to maximize stock values and investment rates of return. To pursue these goals, shareholder value prescribes governance measures such as linking executive compensation to stock performance and business strategies such as prioritizing short-term profits, cost-cutting, acquisitions in core industries, stock buybacks, and debt leveraging (Fligstein 1993; Useem 1993, 1996; Westphal and Zajac 1998, 2001; Zorn et al. 2005). These practices have become ubiquitous under publicly traded (Fligstein 1993) and private equity forms of ownership (Appelbaum and Batt 2014). The growth of shareholder value under these ownership forms has, in turn, been linked to major organizational transformations in U.S. business from deunionization to computerization to increased managerial power (Davis 2009; Fligstein and Shin 2007; Goldstein 2012; Tomaskovic-Devey and Lin 2011). Most quantitative analyses of such transformations, however, have relied on industry-level or cross-national data.

²³ For an exception, see *From Main Street to Wall Street* (Kinser 2006).

I use a unique college-level and multi-wave panel dataset on ownership form for all for-profit colleges²⁴ since 1997 to more robustly test the potential role of private equity and publicly traded firms in the transformation of the sector.²⁵ I find dramatic growth of private equity *niche predators* that gave investors a foothold within the traditional 2-year for-profit college niche. Private equity also helped to establish most publicly traded college companies. Once established, publicly traded incumbents then grew even further as *invasive predators* that expanded in both the traditional 2-year for-profit market as well as the 4-year college market. Consistent with the expected implementation of a new industrial-scale model, college-level enrollments were substantially higher under both shareholder value ownership forms.

Graduation rates and loan repayment rates were also far worse under both publicly traded and private equity colleges than for socio-economically comparable students at public and non-profit schools. Surprisingly, privately held for-profits actually compare favorably to public and non-profit schools in graduation and student loan repayment rates. These findings are supported by more robust tests using event study and fixed effects models to compare trends in enrollment and student outcomes at 295 for-profit colleges that changed ownership either a) from privately held directly to private equity or b) from privately held directly to publicly traded.

In sum, I provide the most robust evidence to date that the spread of shareholder value ownership and ideology contributed significantly to a transformation of U.S. for-profit colleges. Importantly, the findings show how the rise of shareholder value can explain concrete changes in business models and firm behavior in both consumer markets and the private delivery of social programs. At the same time, I help to fill a gap in higher education research from the focus on non-profit and public schools in the growing sociological scholarship on colleges as organizations.

Shareholder Value and a New For-Profit College Business Model

A New For-Profit College Business Model

There is little regarding for-profits in the growing body of scholarship on colleges as *organizations* that provide undergraduate education (Gerber and Cheung 2008; Scott 2015; Stevens, Armstrong, and Arum 2008; Stevens and Gebre-Medhin 2016). The limited existing research on for-profits, however, indicates that a new business model arose in the 1990s. The model appears to involve recruitment and enrollment of federal student aid recipients at a more industrial-scale than in previous decades. Increased enrollment has likely been aided by the early 1990s expansion of federal student loans which can be used at qualifying for-profits (Avery and Turner 2012; Looney and Yannelis 2015). Large-scale recruitment in this environment is a departure from a longstanding model of smaller for-profits operated by owner-educators. Under this older business model, for-profit colleges offer mainly 2-year degrees and certificates in vocational programs like cosmetology, graphic arts, medical technology, personal

²⁴ By all for-profit colleges, I mean all colleges eligible to enroll students with student loans or grants funded by Title IV of the U.S. Higher Education Act. I explain later why I examine only for-profit colleges offering at least a 2-year degree. Such institutions consistently accounted for about 90 percent of for-profit college enrollments during the study period.

²⁵ Data used for this paper will be made available online upon publication of the paper. The data can also be obtained by emailing the author.

services, culinary services, and office administration services (Deming, Goldin, and Katz 2012; Kinser 2006). Faculty and school owner-operators often have applied industry experience and ties with local employers that can hire graduates. The contrasting nature, prevalence, and value of the new industrial-scale model, however, are disputed.

Proponents paint the larger scale of the new for-profit business model in a positive light for expanding enrollment of underserved students. In a 2012 paper on for-profits, Deming, Goldin, and Katz note that supporters see for-profits employing the new model as “nimble critters” that can expand and shift educational offerings with greater flexibility than public and non-profit institutions (Breneman, Pusser, and Turner 2006; Cellini 2010; Turner 2003). As a result, they argue, for-profit colleges can better meet demands for postsecondary training of students to work in rapidly changing sectors such as information technology, finance, healthcare, hospitality, and personal services. This purported responsiveness to labor market demands fits with the longstanding focus of for-profits on vocationally oriented higher education (Deming, Goldin, and Katz 2012).

Critics, however, liken for-profits with the new business model to “agile predators” that aggressively recruitment federally subsidized students but shortchange student support. They point to financial statements of publicly traded colleges that show an unusually large share of spending on marketing and recruitment (Deming, Goldin, and Katz 2012, 148; Steinerman, Volshteyn, and McGarret 2011). Expanded student loan programs mean that recruiters can particularly entice low-income students with zero upfront costs even though for-profits on-average charge much higher tuition rates than non-profit and public schools. Consequently, the share of the \$34 billion in total federal Pell Grant funds going to undergrads at for-profits increased from 14% in 2002 to 25% since 2010 even though they enrolled only 10% of undergrads (The College Board 2013a).²⁶ At the 15 largest for-profits, between 66% and 94% of revenue came from federal student loan and grant aid programs in 2010 (Mettler 2014, 166). For-profits, however, devote much less spending to instruction and student services (U.S. Senate Committee on Health Education Labor and Pensions 2012). Under this potent combination of practices, for-profits increased their net operating margins from \$1 billion to nearly \$7 billion between 2000 and 2011 in 2012 constant dollars (Eaton et al. 2016).

The two most rigorous studies on for-profits suggest that the agile predators account is a better description of the new business model when it comes to the key student outcomes of graduation rates and student loan repayment rates. Both studies, however, leave many questions unanswered as to prevalence, timing, and causes of the new business model. First, the 2012 study by Deming, Goldin, and Katz uses student-level data for the 2004 entering college cohort to show that 4-year for-profits often operate as *dropout mills*. Degree students at for-profits were much less likely to graduate than their counterparts at public and non-profit institutions. The findings, however, are based only on the 2004 cohort and say little about potential differences across types of for-profits or over time.

Second, Looney and Yannelis (2015) have shown that student loan repayment by former for-profit college students declined precipitously during the first decade of the 21st century, even for students who completed a degree. The findings indicate while 2-year for-profits have had better graduation rates, they are effectively *diploma mills* that collect

²⁶ For-profits took in a similarly disproportionate share of GI Bill funding (United States Senate Health Education Labor and Pensions Committee 2010).

excessive tuition financed by government grants and student loans in exchange for inadequate educational and job placement services. The Looney and Yannelis (2015) takes a major step forward by using annual student-level administrative data that covers more than a decade. Still, their findings tell us little about potential patterns in extent and distribution of the new business model across different types of for-profit colleges. For a potential explanation, I turn to research on the rise of shareholder value.

Shareholder Value Explanations and Hypotheses

Following the economic instability of the 1970s and early 1980s, investors, corporate executives, and diverse related actors forged shareholder value as a new ideology and unified set of practices for the organization of U.S. businesses (Fligstein 1993). Shareholder value ideology posits that businesses should be managed to maximize stock values and investment rates of return rather than according to other performance or value measures. To pursue these goals, shareholder value prescribes governance measures such as linking executive compensation to stock performance and business strategies such as prioritizing short-term profits, cost-cutting, a focus on core industries, stock buybacks, and debt leveraging (Fligstein 1993; Useem 1993, 1996; Westphal and Zajac 1998, 2001; Zorn et al. 2005). Economic sociologists have shown that shareholder value has in turn contributed to major organizational transformations in U.S. business from deunionization to computerization to increased managerial power (Fligstein and Shin 2007; Goldstein 2012; Gordon 1996).

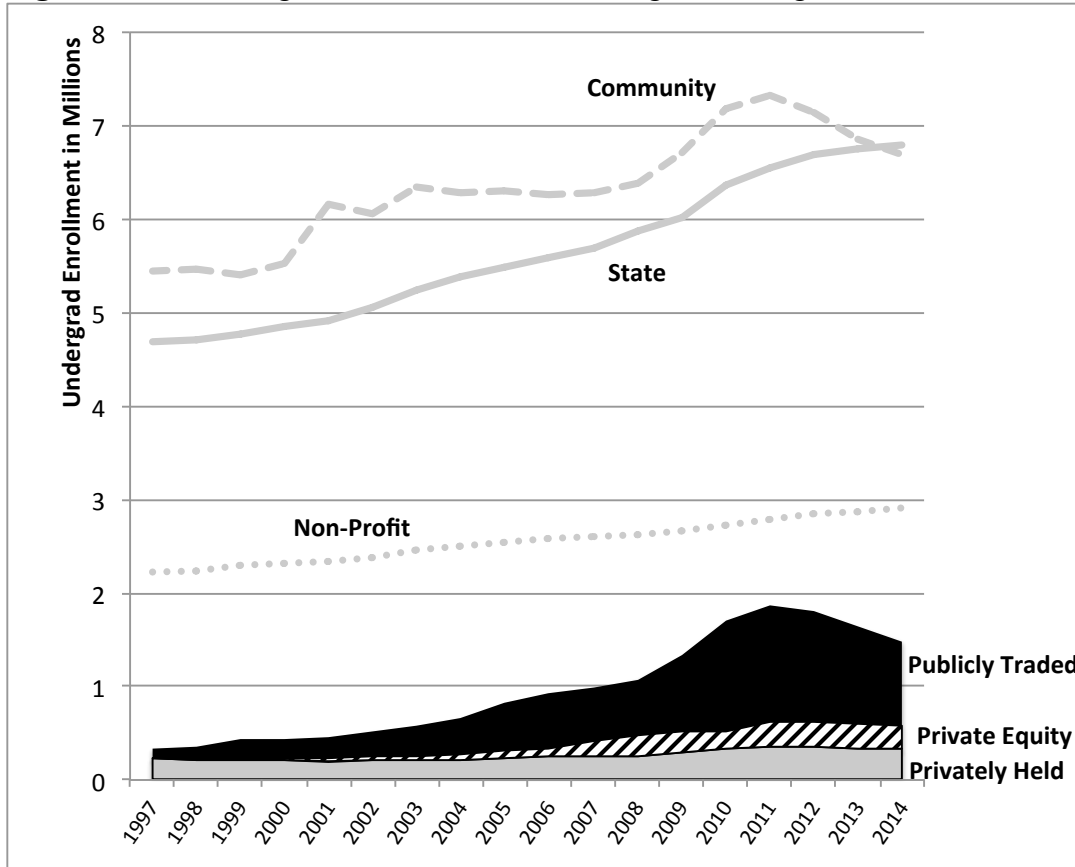
Shareholder value could similarly have fueled the rise of the new industrial-scale recruitment model at for-profit colleges. Shareholder value ideology and practices would provide both motivation and access to capital for firms to develop the new industrial-scale business model once it became possible with the expansion federal student loans in the 1990s (Mettler 2014). The industrial-recruitment model is particularly consistent with shareholder value ideology for maximizing throughputs and minimizing costs (Fligstein and Habinek 2014; Fligstein and Shin 2007; Goldstein and Fligstein 2014). At the same time, shareholder value would deliver greater capital for marketing, online technologies, and recruitment via telemarketing and direct outreach.

I argue that shareholder value and the new business model, however, would spread in the for-profit college sector through distinct but complementary mechanisms involving private equity and publicly traded forms of shareholder value ownership. Consistent with this thesis, Figure 1 shows that for-profit college enrollment growth since 1997 occurred overwhelmingly at colleges under publicly traded and private equity ownership. Likewise, it has been shown that the vast majority of growth in for-profit colleges' net operating margins occurred under these two forms of shareholder value ownership (Eaton et al. 2016).

To further develop the argument, I will develop a set of hypotheses regarding different mechanisms by which shareholder value could spread and promote the new industrial-scale for-profit college business model. I will offer three groups of hypotheses on: 1) how shareholder value spreads through changes in ownership forms, 2) how each ownership form promotes the new industrial-scale model, and 3) how graduation and student loan repayment rates could suffer from recruitment of under-prepared students and cuts to student support under the new model. In developing these hypotheses, I will

draw on three major theoretical perspectives on shareholder value from *agency theorists*, *accumulation regime* scholars, and *institutionalists*.

Figure 1: Fall Undergraduate Enrollment at Colleges Offering at Least a 2-Year Degree



Sources: IPEDS and author’s original database of for-profit college firm ownership.

The Spread of Shareholder Value Ownership Forms

Shareholder value has been known to spread through growth in publicly traded ownership since shareholder value became the modus operandi for this ownership form in the 1980s. Promoted by agency theorists (Jensen and Meckling 1976; Jensen and Ruback 1983), shareholder value first arose in publicly traded firms as a solution to problems stemming from the separation of investor ownership and managerial control. Owners and managers often are one and the same under privately held ownership, which is predominant primarily in small businesses (Shanker and Astrachan 1996). The investment interest of stockholders at publicly traded companies, however, can clash with managers’ interests such as greater executive compensation, empire building, and shirking (Shleifer and Vishny 1997). As a purported solution to these problems, shareholder value ideology and practices would encourage investors to provide more capital to publicly traded firms that can power expansions in sectors such as for-profit colleges.

Private equity was first seen as spreading shareholder value through prominent hostile takeovers of publicly traded firms in the 1980s (Davis and Stout 1992). New institutionalist research shows, however, that private equity is actually much more

involved in the acquisition of smaller and younger privately held firms. In both cases, private equity managers use heavy debt leveraging to execute buyouts (Appelbaum and Batt 2014, 47). Private equity managers then replace top executives, sell off underperforming company assets, and provide financial engineering to execute the larger shareholder value playbook of layoffs and cost-cutting. Private equity managers and their investors in turn reap profits both through dividend payouts as well as through capital gains when the company is later sold or taken public (Appelbaum and Batt 2014, 57).

In line with these new findings on private equity acquisitions of privately held firms, we should expect private equity to play a key role in the spread of shareholder value to the for-profit college sector where privately held ownership was dominant at the beginning of the 1990s. By already possessing accreditation, privately held for-profit colleges should be ready vessels for a more scale-based business model. When successful, private equity investors would take their acquired for-profit colleges public. Through this process, private equity should play a critical role in the establishment of publicly traded for-profit college firms. Shareholder value may ultimately spread furthest through large-scale growth of successful publicly traded firms. But the role of private equity in the creation of publicly traded for-profit college firms should be crucial.

Hypothesis 1A: Private equity will help to establish most publicly traded for-profit colleges.

I expect, however, that private equity will enter the for-profit sector primarily by taking ownership in firms that are *niche predators* with a foothold in the traditional 2-year for-profit college niche. Deep budget cuts to community colleges have provided a particularly safe opening for 2-year degree program expansion (Bound and Turner 2007). By focusing on 2-year degree programs, private equity backed newcomers could avoid competition with well-established non-profits and state schools in the provision of more tightly regulated 4-year degree programs. This argument fits with the institutionalist view of a market as a role structure in which challengers often avoid direct competition with dominant incumbents (Fligstein 2001, 17).

Hypothesis 1B: Private equity will primarily take ownership in *niche predators* within the traditional 2-year college niche.

I expect that publicly traded incumbents are more likely to be dominant incumbents that act as *invasive predators*. I expect this because market incumbents tend to be more free to pursue the growth credo of shareholder value through expansion of related product lines (Davis, Diekmann, and Tinsley 1994; Fligstein 2001). With established brands and infrastructure, publicly traded colleges indeed seem better equipped to acquire and start new colleges in the 4-year college sector where non-profits and state schools are dominant. Direct changes to publicly traded ownership will also occur through a small number of IPOs by privately traded firms with no private equity backing – and through publicly traded firms entering the market from outside the sector.

Hypothesis 1C: Publicly traded firms will be *invasive predators* that increase their ownership of both 4-year and 2-year colleges.

Shareholder Value, the Industrial-Scale Model, and Enrollment Increases

The different major theoretical perspectives on shareholder value together suggest that it will provide capital resources, material pressures, and an ideological framework for the new industrial-scale for-profit college model. These three drivers should lead to increased enrollments at colleges under both private equity and publicly traded ownership. Agency theory particularly argues that shareholder value will provide greater capital (Shleifer and Vishny 1997) to finance implementation of an industrial-scale model through greater investment in marketing, online technologies, and telemarketing. Accumulation regime scholars place greater emphasis on the necessity for increased short-term profits from dependence on financial markets (Arrighi 1994; Krippner 2011; Orhangazi 2008). The industrial-recruitment model could help meet profit needs by bringing in greater student-loan and federal grant revenue without necessarily requiring commensurate cost increases in areas like instruction and student support. Institutional theories meanwhile highlight that an industrial-scale model would be consistent with shareholder value ideology around maximizing throughputs (Fligstein and Habinek 2014; Fligstein and Shin 2007; Goldstein and Fligstein 2014).

Hypothesis 2A: Colleges under private equity and publicly traded ownership will have higher enrollments than privately held colleges because of the industrial-recruitment model.

I take an institutionalist view, however, to argue that private equity is more likely to acquire colleges that are already implementing an industrial-scale model. Shareholder value ideology argues that firms should grow through the acquisition of underperforming competitors in core industries (Davis and Stout 1992; Fligstein and Shin 2007). In the for-profit sector, shareholder value logic would perceive colleges as underperforming if they are not already implementing the industrial-scale recruitment model. Institutionalists have argued, however, that shareholder value orthodoxy sometimes serves more as myth and ceremony when the ideology is at odds with the immediate perceived interests of principals (Westphal and Zajac 1998, 2001). As newcomers to the for-profit college sector, moreover, private equity investors are likely to have limited expertise and infrastructure for the new business model. These factors should inhibit private equity's capacity to introduce the new business model where it is not already in place. This expectation is consistent with recent findings that private equity investors provide little expertise for production and services. Instead investors primarily provide speculative capital and financial engineering in exchange for expected returns (Appelbaum and Batt 2014; Folkman et al. 2009; Froud and Williams 2007). Private equity should provide additional capital to further implement the new industrial-scale model at acquired colleges. But shifts in enrollment should be less pronounced because the model is already being implemented before acquisition.

Hypothesis 2B: Changes from privately held to private equity ownership will occur at colleges that are *already* implementing the industrial-scale business model with growing enrollment.

On the other hand, I expect that publicly traded firms as incumbents will follow shareholder value orthodoxy by acquiring colleges where the model is *not already* in place. As I already explained for Hypothesis 1C, I expect most direct changes from privately held ownership to publicly traded ownership to occur through such acquisitions. Publicly traded incumbents will have established infrastructure and expertise for implementing the industrial-scale model at acquired colleges after acquisition. Established dominance in the market may also make such acquisitions appear less risky. IPOs by privately held for-profit colleges with no private equity backing should also mark a shift to shareholder value ideology and financing. Implementation of the industrial-scale model at these colleges should then lead to new enrollment growth.

Hypothesis 2C: Changes from privately held to publicly traded ownership will occur at colleges that are *not already* implementing the industrial-scale model and will lead to new enrollment growth.

Shareholder Value, the Industrial-Scale Model, and Negative Student Outcomes

I expect that colleges under both forms of shareholder value ownership will also have unusually poor graduation and student loan repayment rates because of excesses in the implementation of the industrial-scale model. On the front side, colleges will seek to maximize profits by driving up revenue through the extension of aggressive recruitment to underprepared students who can enroll with zero upfront costs by using federal student aid grants and loans. On the backside, colleges will seek to further maximize profits by cutting costs to instruction, student support, and job placement as less necessary for bringing students and federal subsidies in the door. Numerous case studies of publicly traded for-profit colleges as part of a major U.S. Senate investigation find substantial evidence for such cost-cutting (U.S. Senate Committee on Health Education Labor and Pensions 2012). As a result, students will be less likely to graduate. Because of diminished educational quality and job placement services, even students that do graduate will struggle to repay student loans. This transformation would explain the finding that U.S. student loan repayment rates have primarily declined in the for-profit college sector (Looney and Yannelis 2015).

I expect very poor graduation and loan repayment rates under shareholder value despite the longer-term risks regulatory and public backlash in response to negative student outcomes. We have seen extensive regulatory backlash in recent years, including new federal student loan regulations that require for-profits to maintain better student loan repayment rates (Fain and Lederman 2015). Accumulation regime and institutionalist perspectives both support this expectation, but for slightly different reasons. Accumulation regime scholars argue that firms will engage in excessive cost cutting and risk taking because it is necessary under the current regime of dependence on financial markets for capital (Arrighi 1994; Gordon 1996; Krippner 2011).

Institutionalists argue that taken-for-granted assumptions of shareholder value can lead excessive risk taking, cost-cutting, and malfeasance even when these are not the best practices for organizational survival (Dobbin and Jung 2010; Dobbin and Zorn 2005; Fligstein and Shin 2007). Institutional and accumulation regime arguments, however, are both at odds with the agency theory expectation that shareholder value will prevent excessive risk taking through measures like long-term incentive plans that tie executive compensation to longer term stock performance (Jensen and Meckling 1976; Shleifer and Vishny 1997; Westphal and Zajac 1998).

Hypothesis 3A: Graduation and student loan repayment rates at private equity and publicly traded schools will compare badly with those at state, non-profit, and privately held schools.

I expect, however, that shifts in graduation and loan repayment rates will occur differently through changes to private equity versus publicly traded ownership. As explained above, I expect private equity to primarily acquire colleges that are already implementing the new industrial-scale model. Student outcomes will already have been poor because of preceding implementation of the new business model. So there should be no systematic decline in graduation or loan repayment rates.

Hypothesis 3B: Change in college ownership from privately held to private equity *will not* lead to declines in graduation and student loan repayment rates because acquired colleges will have already been implementing the industrial-scale model.

On the other hand, changes in college ownership from privately held to publicly traded should lead to declines in both graduation and student loan repayment rates. As already explained, publicly traded firms will tend to acquire privately held colleges that are not already implementing the new business model. So implementation of the business model under the new publicly traded ownership should cause a decline in student outcomes.

Hypothesis 3C: After change in ownership form from privately held to publicly traded, graduation and student loan repayment rates will decline as the new business model is implemented.

Data and Research Design

My research design flows from the premise that the for-profit college sector is likely transformed over time both through the establishment of new for-profit colleges under shareholder value and through organizational changes within colleges. Accordingly, I assembled an original college-level, multi-wave panel dataset for all community, state, non-profit, and for-profit colleges that offered at least a 2-year degree and were eligible to enroll recipients of U.S. Department of Education Title IV student

loans and grants. I augmented the database by gathering and coding comprehensive, annual data for parent ownership and ownership form for all Title IV for-profit colleges for all years from 1997 to 2014. This unique dataset allows me to analyze patterns in college-level enrollments and student outcomes over time with descriptive statistics, regression adjusted estimates, event study models, and panel fixed effect models. I will first provide additional detail on the dataset before further explaining my quantitative methods of analysis.

Data

For this study, I created an original data set that builds on college-level longitudinal data from the Integrated Postsecondary Education Data System (IPEDS) for the analysis. The data covers all of the 3,000 plus for-profit colleges that enrolled federally supported students in at least a 2-year degree program since 1997. For comparison, the dataset also includes all comparable non-profit, state, and community colleges. I determined the ownership form of the parent company for each for-profit college for each year first by reviewing unpublished private equity investment portfolio documents gathered by the Senate Health, Education, Labor, and Pension (HELP) Committee. I then reviewed 10-K statements for publicly traded firms, the ThomsonOne database of private equity investment, and online-course catalogs in which all Title IV colleges are required to disclose their ownership history.

The most rigorous research on for-profit college student outcomes has primarily used individual student-level data from the Beginning Postsecondary Student (BPS) survey (Deming, Goldin, and Katz 2012; Gelbgiser 2015). This approach has yielded rich results on divergent student outcomes at for-profits for students with different socio-economic backgrounds and household resources. The BPS, however, has only surveyed 3 entering cohorts of students since 1990 and the subsample of for-profit students only includes about 200 students for each surveyed cohort. As a result, BPS does not yet have multiple waves of surveyed students across a representative sample of different programs by degree *and* forms of for-profit college ownership.

In the light of limitations with available student-level data for for-profits, the best option for testing my hypotheses is to use IPEDS institution level data for enrollments and graduation rates and College Scorecard data for student loan repayment rates. I will commonly refer to the IPEDS institution unit of reporting as a college. This is an appropriate unit of analysis because it corresponds to the organizational level at which accreditation, recruitment, enrollment, and instruction are organized.

I opt to use only data for colleges that offered at least a 2-year degree because less-than-2-year institutions like many cosmetology schools have both a much lower cost and lower scholastic requirements for degree completion. As a result, less-than-2-year institutions are less likely to expose students to low graduation rates and student loan repayment rates. Annually since 1997, approximately 90% of for-profit students have attended institutions offering at least a 2-year degree.

Ownership Variables

For the initial purpose of testing Hypothesis 1A through 1C about the spread of shareholder value ownership forms, I coded parent companies and ownership form data for all for-profit colleges eligible for federal support since 1997. I first coded the year and

investing firm name of any private equity investments in for-profit college firms that were publicly traded at any point since 1997. This allows me to test Hypothesis 1A that private equity helped establish most publicly traded for-profits. Second, I coded dummy variables for each institution-year with values of 0 and 1 for each ownership form of privately held, private equity, and publicly traded. This allows me to test Hypotheses 1B and 1C that private equity will mainly increase its ownership of 2-year colleges but publicly traded firms will also increase their ownership of 4-year colleges. I also replicated Deming et al's variables for chain ownership and online offerings as alternative explanatory variables that may work together or independently of ownership form (2012). Summary statistics for all variables are provided in Table 1.

Dependent Variables: Enrollment and Student Outcomes

To test Hypotheses 2A through 2C on ownership form and the industrial-recruitment model, I use the total fall enrollment count that is reported annually by each college to IPEDS. Higher college-level enrollments will be interpreted as an indication that the industrial-recruitment model is being implemented.

To test Hypotheses 3A through 3C on student outcomes, I first use the IPEDS variable for the graduation rate for the full time freshmen cohort that entered in a given institution-year. Such data is available for graduation rates after 6 years for entering fall fulltime freshmen cohorts in 4-year degree programs from 1997 through 2009. Equivalent data is available for graduation rates after 3 years for entering cohorts in 2-year colleges' degree/certificate programs from 2000 through 2011. Second, I use the College Scorecard variable for student loan repayment rates after 3 years for the exiting cohort in a given institution-year from 2006 to 2010. College Scorecard student loan repayment rate data is calculated using data from the National Student Loan Data System database.

Cohort Control Variables

A drawback of using IPEDS and College Scorecard data on student cohorts is that it is difficult to account for the role of student socio-economic background and household backgrounds in modeling with cohort-level data. To mitigate this shortcoming, I will estimate models that include controls for the share of cohorts from different socio-economic cohort subgroups when modeling the relationship between shareholder value ownership forms and overall graduation rates and student loan repayment rates. As detailed in Table 1, IPEDS provides data for the share of each cohort from major gender-race and gender-ethnicity groups such as African American women. IPEDS also provides data for the share of fulltime freshmen that received Pell Grants, but only for 2000 onwards. For exiting student loan repayment cohorts, College Scorecard provides data for the cohort shares that graduated, were low-income, received Pell Grants, were dependent students, were women, and were first generation college students. Data for shares from the cross-sections of these groups, however, is not available. Finally, all models for graduation and student loan repayment rates will use IPEDS data to control for whether the for-profit had selective or open admissions.²⁷

As a further robustness check, Appendix A will also report estimates that take advantage of IPEDS and College Scorecard data on graduation and student loan

²⁷ Though it should be noted that over 90 percent of for-profits, including those offering 4-year degrees, have had open admissions since 1997.

repayment rates *by cohort subgroups*. For example, IPEDS publishes separate graduation rates for cohort race/ethnicity/gender subgroups such as fulltime freshmen African American women. Similarly, College Scorecard provides student loan repayment rates by subgroups for household income, gender, and parents' educational attainment.

Table 1: Institution-Level Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min.	Max.
Dependent Variables					
Fall Undergrad Enrollment	84,178	3,302.99	5,925.51	1.00	314,308.00
Log Fall Undergrad Enrollment	84,178	6.90	1.77	0.00	12.66
Less than 4-Year Degree Graduation Rate	36,447	0.43	0.26	0.00	1.00
4-Year Degree Graduation Rate	25,928	0.51	0.21	0.00	1.00
Student Loan Repayment Rate	20,263	0.67	0.19	0.00	1.00
Ownership Variables					
State 4-Year	85,654	0.14	0.34	0.00	1.00
Non-Profit	85,654	0.34	0.47	0.00	1.00
Privately Held	85,654	0.15	0.36	0.00	1.00
Private Equity	85,654	0.04	0.19	0.00	1.00
Publicly Traded	85,654	0.09	0.28	0.00	1.00
Community College	85,654	0.24	0.43	0.00	1.00
Other Explanatory Variables					
Non-Selective Admissions	85,654	0.61	0.49	0.00	1.00
Part of College Chain	85,654	0.20	0.40	0.00	1.00
Online Offerings	85,654	0.07	0.25	0.00	1.00
Cohort Student Aid Controls					
Share Federal Grant Aid Recipients	60,782	0.49	0.24	0.00	1.00
Less than 4-Year Degree Cohort Demographic Controls					
Share African American Men	35,981	0.06	0.10	0.00	1.00
Share African American Women	35,981	0.09	0.15	0.00	1.00
Share Hispanic Men	35,981	0.05	0.10	0.00	1.00
Share Hispanic Women	35,981	0.24	0.21	0.00	1.00
Share White Men	35,979	0.35	0.26	0.00	1.00
Share White Women	37,458	0.02	0.07	0.00	1.00
Share Unknown Race/Ethnicity Men	37,458	0.03	0.09	0.00	1.00
Share Unknown Race/Ethnicity Women	35,981	0.01	0.05	0.00	1.00
Share American Indian or Alaska Native Men	35,980	0.01	0.06	0.00	1.00
Share American Indian or Alaska Native Women	35,981	0.01	0.05	0.00	1.00
Share Asian Men	35,981	0.02	0.05	0.00	1.00
Share Asian Women					
4-Year Degree Cohort Demographic Controls					
Share African American Men	26,485	0.05	0.10	0.00	1.00
Share African American Women	26,485	0.07	0.13	0.00	1.00
Share Hispanic Men	26,485	0.04	0.08	0.00	1.00
Share Hispanic Women	26,485	0.05	0.11	0.00	1.00
Share White Men	26,485	0.31	0.21	0.00	1.00
Share White Women	26,485	0.34	0.21	0.00	1.00
Share Unknown Race/Ethnicity Men	26,485	0.02	0.06	0.00	1.00
Share Unknown Race/Ethnicity Women	26,485	0.03	0.07	0.00	1.00
Share American Indian or Alaska Native Men	26,485	0.00	0.03	0.00	1.00
Share American Indian or Alaska Native Women	26,485	0.01	0.04	0.00	1.00
Share Asian Men	26,485	0.02	0.05	0.00	1.00
Share Asian Women	26,485	0.02	0.05	0.00	1.00
Student Loan Repayment Exiting Cohort Controls					
Share of Graduated	19,402	0.46	0.23	0.00	1.00
Share that is Low-Income	19,674	0.53	0.19	0.08	1.00
Share that Received Pell Grants	19,326	0.62	0.16	0.00	1.00
Share with Dependent Student Status	19,425	0.50	0.24	0.00	1.00
Share Women	17,899	0.63	0.18	0.00	1.00
Share First Generation College Students	20,032	0.38	0.10	0.00	1.00

Sources: IPEDS and author's original database of for-profit college firm ownership.

Descriptive Statistics and Longitudinal Regression Models

To test Hypotheses 1A through 1C about the spread of shareholder value ownership, I will report ownership history and annual counts of firms and colleges by ownership form. To test Hypotheses 1B and 1C regarding private equity niche predators and publicly traded invasive predators, I will break down annual counts of firms and colleges by ownership form and by whether they offer 4-year degrees or only 2-year degrees.

As preliminary tests for Hypotheses 2A and 3A about the relationships between ownership form, enrollments, and student outcomes, I will also report annual college-level medians and OLS regression adjusted means. This will allow us to see how trends in enrollment, graduation rates, and student loan repayment rates compare over time between ownership forms. Medians and adjusted means will be provided for privately held, non-profits, state, and community colleges for the purpose of comparison. OLS regression adjustment will estimate means with admissions selectivity and cohort demographics held constant at the annual mean for all for-profit, non-profit, state, and community colleges in the dataset.

I will use two types of more robust longitudinal panel data models to test Hypotheses 2B, 2C, 3B, and 3C regarding ownership form changes, enrollment, and student outcomes. These methods will specifically analyze the 295 for-profit colleges that changed either a) from privately held ownership to private equity ownership, or b) from privately held ownership to publicly traded. The first method to be used is the event study method. The second will be the estimation of more traditional panel fixed effects models. I will apply each method to estimate potential effects on enrollment first. I will then separately use each method to estimate potential effects on graduation rates and finally for student loan repayment rates.

Except for counts of firms by ownership form, all estimates will be made for annual observations at the college level as the U.S. Department of Education and IPEDS technical reporting unit for “institutions.”²⁸ As was already mentioned, I take this approach because the college level is the primary unit in which recruitment, degree education, and college accreditation are organized. The college level is also the unit by which most ownership form changes occur. Nevertheless, when reporting college-level estimates, I will report cluster-robust standard errors for clusters of colleges by the new parent firm at the time of ownership form change. In other words, I will report cluster-robust standard errors for clustered treatment groups in which the new parent firm is the treatment group for ownership form change. This is intended to account for a small number of idiosyncratic firms being potentially responsible for a disproportionate number of college-level changes to shareholder value ownership forms through multiple acquisitions or other mechanisms of ownership change.

Event Study Models

Event study models will allow us to see how college-level enrollments and student outcomes changed in the years leading up to and the years following each type of ownership change. This approach helps to guard against misinterpretation of causal order

²⁸ Prior to 2007, each institution was required to offer at least 50 percent of courses at a brick and mortar location. With the elimination of this requirement, some institutions have moved to exclusively online offerings.

(Jacobson, LaLonde, and Sullivan 1993; McCrary 2007). Without the use of such preliminary analysis, the more common use of panel fixed effects models is problematic for addressing questions of causal order (S. L. Morgan and Winship 2007; Vaisey and Miles 2014, 262–271). In the case of for-profit college ownership change, one particular risk is that fixed effects estimates for ownership changes could reflect pre-existing trends that actually began prior to ownership change.

In mathematical notation, the event study models will estimate the effect of dummy variables indicating that an observation was made j number of years before or after ownership form change events. I therefore calculate least squares estimates for the effect θ_j in the regression model:

$$Y_{i,t} = \mu_i + \nu_t + \lambda_{S(i)t} + \sum_{j=a}^b \theta_j D_{i,t}^j + \gamma z_{i,t} + e_{i,t},$$

in which $Y_{i,t}$ will represent the dependent variables of 1) total fall undergraduate enrollment, 2) graduation rate of the 4-year degree seeking fall fulltime freshmen cohort, and 3) graduation rate of the 2-year college degree/certificate seeking fall fulltime freshmen cohort, and 4) three-year student loan repayment rates for the exiting cohort for the college i at time t . College-level fixed effects are represented by μ_i for unobserved, time-invariant college-level factors. Year fixed effects are represented by ν_t for unobserved, time-variant factors that may affect all colleges nationally. $\lambda_{S(i)t}$ indicates that state-by-year effects are included in order to control for unobserved changes in state-level factors such as state policy, demographics, and economic trends. $z_{i,t}$ represents an observed, time-variant covariate for highest degree offered. Unobserved idiosyncratic time varying factors are indicated by $e_{i,t}$. $D_{i,t}^j$ represents the dummy variables for leads and lags of the year of ownership change events from privately held to publicly traded or from privately held to private equity. The leads and lags can be expressed:

$$D_{i,t}^j = \begin{cases} D_i 1(t \leq \tau_i + a) & \text{for } j = a \\ D_i 1(t = \tau_i + j) & \text{for } a < j < b \\ D_i 1(t \geq \tau_i + b) & \text{for } j = b \end{cases}$$

In the models for publicly traded ownership change events, D_i indicates whether the college ever had a direct change in ownership from privately held to publicly traded, for which τ_i gives the year in which the ownership change occurred and $1(A)$ is one if A is true but is otherwise zero.

Panel Fixed Effects Models

Following the event study models, I will estimate traditional panel fixed effects models in order to succinctly report changes in estimated effects of ownership change as I modify models by adding covariates. Covariates to be added will be dummy variables for state-by-year fixed, cohort socio-economic variables, admissions selectivity, chain ownership, and online offerings (Deming, Goldin, and Katz 2012). Similarly, I will be able to clearly report any difference in estimated effects of ownership form changes on student outcomes after adding total college enrollment as an indicator for the industrial-recruitment business model being implemented. Finally, I will be able succinctly

compare results after adding privately held for-profits to the fixed effects models as a plausible counter-factual for how privately held colleges were likely to perform if they did not experience a change in ownership form.

For the traditional fixed effects models, I created a dummy variable that is coded as one for every institution-year after the ownership change and otherwise zero. A comparable dummy variable was created for ownership changes to privately traded ownership. Fixed effects models were then estimated as:

$$Y_{i,t} = \mu_i + \nu_t + \lambda_{S(i)t} + \beta x_{i,t} + \gamma z_{i,t} + e_{i,t},$$

where $Y_{i,t}$ will represent dependent variables the institution i at time t in separate fixed effects models for total 1) undergraduate enrollment, 2) graduation rates, and 3) student loan repayment rates. The ownership change dummy variable is represented by $x_{i,t}$ and its estimated effect is indicated by β . $z_{i,t}$ represents covariates such as cohort socio-economic variables.

Results

The Spread of Shareholder Value Ownership Forms

Table 2 provides results that strongly support Hypothesis 1A that private equity would help to establish most publicly traded for-profit college companies. The table details major acquisitions and mergers, year of first private equity investment, private equity investment backers, year of initial public offering (IPO), and peak undergrad enrollment for all publicly traded for-profit college firms and their colleges which offered at least 2-year degrees. Among the 23 such publicly traded firms, private equity took an ownership stake in 14 firms prior to IPOs, including in for-profit giants EDMC, Kaplan, Corinthian, DeVry and ITT. Private equity invested in such firms as early as 1986. Another 5 publicly traded college firms, Laureate/Sylvan, Regis, Steiner Education, Broadview, and Salon Professional, operated as publicly traded companies in other nearby industries prior to entering the for-profit college sector. Regis, however, bolstered its expansion into the sector by acquiring private equity owned Empire Beauty schools. Only 4 publicly traded for-profit college firms, Apollo Group, Career Education Corporation, Strayer Education, and National American University went public without prior private equity ownership. National American University, American Public Education and Strayer, however, received private equity investment shortly after going public. Career Education Corporation and National American University are the only companies that went public without private equity backing for whose colleges there is data on enrollments and graduation rates both before and after IPOs.

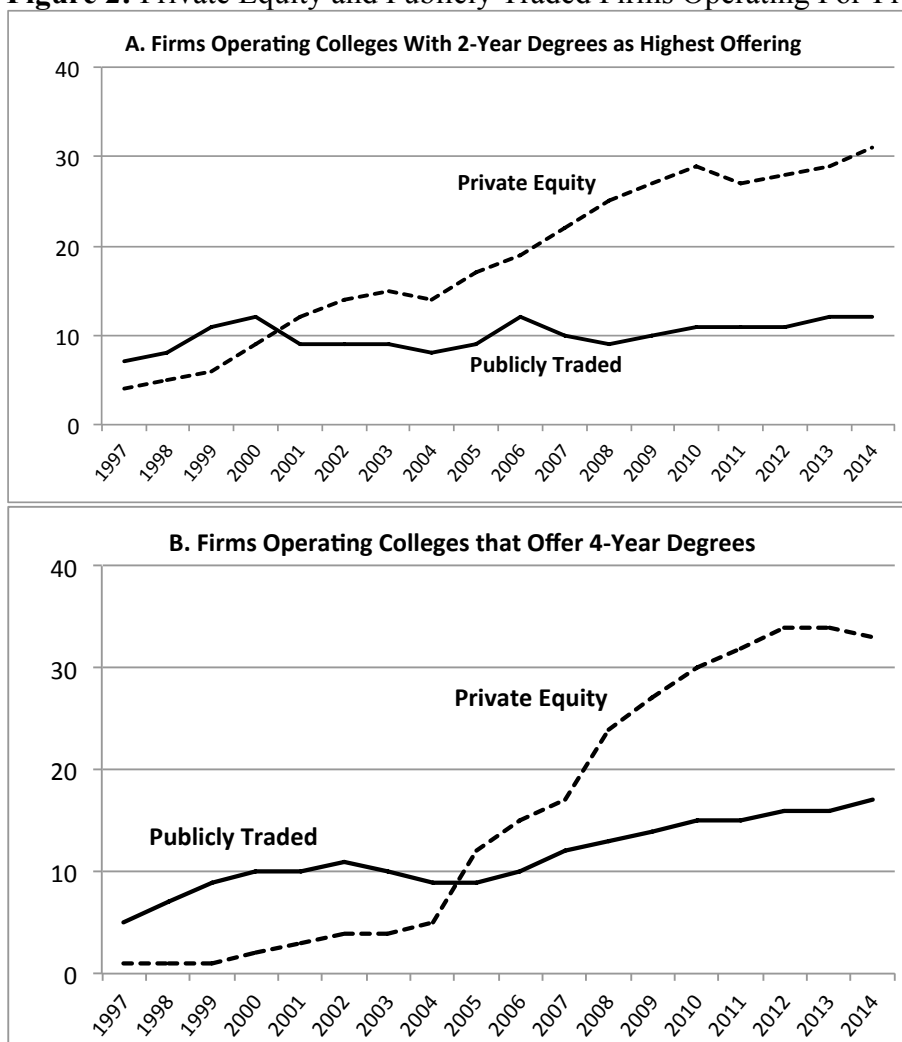
Table 2: Past Private Equity Backing of For-Profit Colleges that Became Publicly Traded

Firm	Major Acquisitions & Mergers	Year of First Private Equity Investment	Private Equity Investors	IPO	Year of Peak Enrollment	Peak Undergrad Enrollment
Apollo Group		NA	NA	1994	2010	393,378
Education Management Corporation	Argosy (2002)	1986	Goldman Sachs Capital Partners, Leeds Equity Partners, Providence Equity Partners	1996	2012	142,876
Career Education Corporation	Whitman Education (2003)	NA	NA	1998	2011	118,728
Kaplan, Inc.	Quest Education (2000)	1988	Investech, Sprout Capital, Richland Ventures (financed Quest which went public in 1988 and Kaplan acquired to enter the market).	1988	2011	112,732
Corinthian, Inc.	National Education (1995)	1995	Wells Fargo Norwest Equity Partners and Norwest Venture Partners	1999	2011	104,559
DeVry, Inc.	US Education (2008)	1987	Primus Capital, Frontenac	1991	2011	104,203
ITT Educational Services, Inc.		1986	Blum Capital Partners, Wellington Management Company, Select Equity Group, Providence Equity Partners	1994	2011	86,568
Bridgepoint		2004	Warburg Pincus	2009	2013	69,380
American Public Education Incorporated		2006	ABS Partners and Camden Partners	2007	2013	45,772
Strayer Education, Inc.		2000	New Mountain Capital and Deutsche Bank Capital Partners	1996	2010	39,864
Grand Canyon Education		2005	Significant Federation, Endeavor Capita	2009	2014	35,205
Lincoln	Siemann (2000)	2000	Stonington Partners and Hart Capital	2005	2011	28,655
Universal Technical Institute		1997	Charles Bank Private Equity	2003	2010	28,153
Concorde Career Colleges, Inc.		1997	Camden Partners	1997	2014	11,621
National American University		2009	Camden Partners	2007	2013	11,274
Capella		2003	Forstmann Little & Co., Putnam Investment Management, RBC Capital Partners, TH Lee Putnam Ventures, and ThinkEquity	2006	2011	8,358
Laureatte/Sylvan		NA	NA	1993	2007	7,467
Regis Corporation	Empire (2007)	2004	Key Principal Partners (Investment was in Empire prior to merger. Regis was a publicly traded beauty company prior to entering the for-profit college market.)		2007	2,016
Steiner Education Group		NA	NA	1996	2012	1,628
Broadview Institute		NA	(publicly traded Broadview acquired for-profit colleges in 2005 after producing educational videos for federal agencies for two decades).	-	2011	1,454
Salon Professional			(Started by publicly traded Redken beauty supplies in 2000.)	-	2012	1,051
Aspen University		1998	Quad Partners, Sophrosyne Capital	2012	2013	325
Navitas / SAE		2003	ANZ Private Equity	2006	2014	310

Sources: IPEDS and author's original database of for-profit college firm ownership.

Figure 2 provides firm-level results that are mostly in line with Hypotheses 1B and 1C that private equity will primarily own colleges that are *niche predators* while publicly traded firms will be *invasive predators*. Figure 2A reports growth in the number of firms under shareholder value ownership for whom 2-year degrees were the highest offering. The number of such firms under private equity ownership increased steadily from 4 in 1997 to more than 30 in 2014. In contrast, the number of publicly traded firms that operated only in the 2-year niche held relatively steady at about 10 from 2000 onwards. Privately held firms with 2-year colleges are excluded from Figure 2A because there is a much larger number of privately held firms that operate just one or two such colleges. The number of such privately held firms declined from just under 600 to a little over 400 since 2010.

Figure 2: Private Equity and Publicly Traded Firms Operating For-Profit Colleges



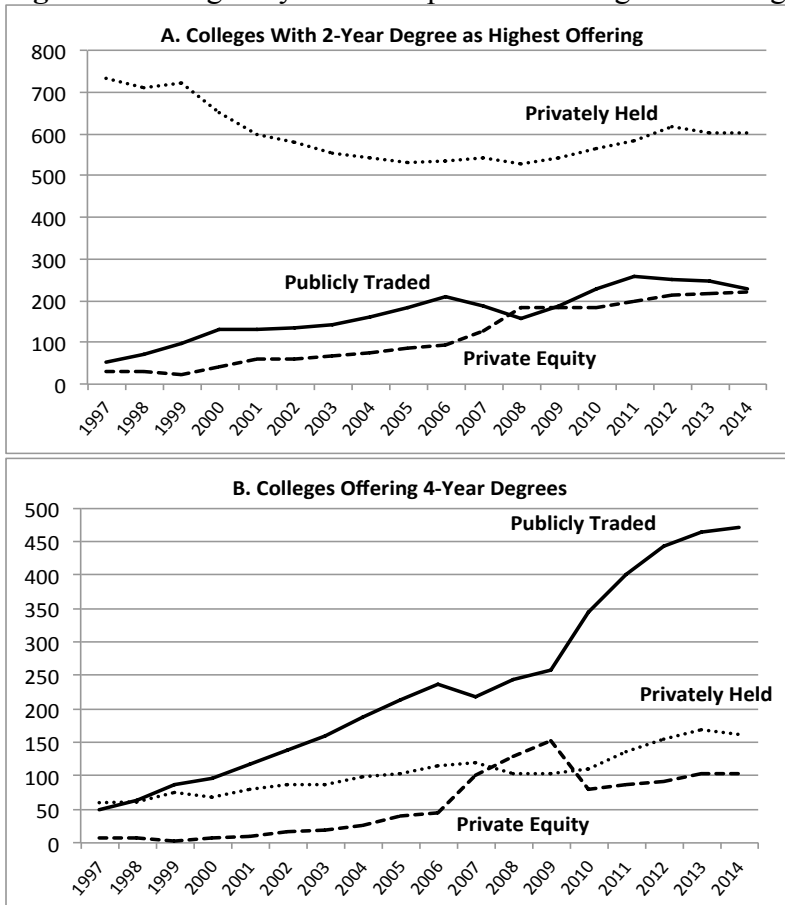
Sources: IPEDS and author’s original database of for-profit college firm ownership.

Figure 2B, meanwhile, reports a sharp rise in the number of private equity firms that operated colleges in the more saturated 4-year market where non-profit and state schools have long been dominant. This rise in private equity firms that operated 4-year

colleges appears on the surface to contradict Hypothesis 1B that private equity will mainly seek a 2-year college foothold as niche predators. The number of publicly traded firms that operated 4-year colleges also rises steadily from 5 to 18. Privately held firms with 4-year colleges (which are again excluded from Figure 2B because of scale) increased from 47 to 112.

Counts of individual colleges by ownership form in Figure 3, however, provide superseding evidence in support of Hypotheses 1B and 1C regarding private equity niche predators and publicly traded invasive predators. Publicly traded and private equity firms commonly operated multiple separate accredited 2-year colleges. Accordingly, Figure 3A shows that the number of individual 2-year colleges owned by private equity firms increased from less than 50 to over 200. This growth matched ownership of 2-year colleges by publicly traded firms. Though neither shareholder value ownership form surpasses the number 2-year colleges under privately held ownership, which dipped from over 700 before stabilizing around 600. Figure 2B, meanwhile, shows that growth of 4-year for-profit colleges occurred overwhelmingly under publicly held ownership. The number of 4-year colleges under publicly traded ownership rose from 50 to nearly 500. In contrast, the number of 4-year colleges under private equity meanwhile rose to just over 100 except for a surge between 2007 and 2009 when publicly traded EDMC was acquired by private equity investors led by Goldman Sachs.

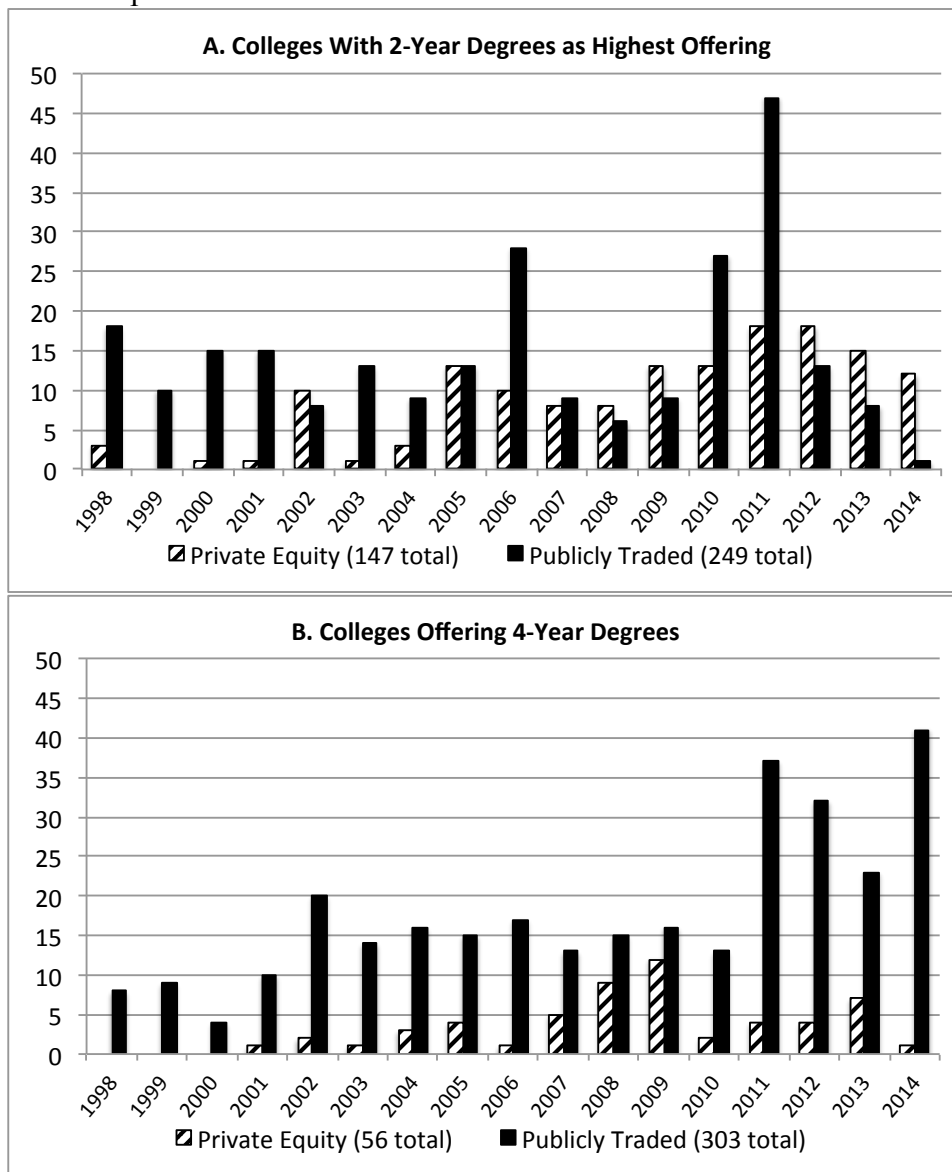
Figure 3: Colleges By Ownership Form and Highest Undergrad Degree Offered



Sources: IPEDS and author’s original database of for-profit college firm ownership.

I also find support for Hypotheses 1B and 1C regarding niche and invasive predators by further decomposing the spread of shareholder value ownership between openings of new colleges and changes of ownership at existing privately held colleges. Publicly traded invasive predators should be able to grow more through the opening of new colleges because of their established infrastructure and expertise in the sector. Figure 4 shows that publicly traded firms did grow through far more openings of both 2-year (249) and 4-year colleges (303). In contrast, private equity owned firms opened just 147 new 2-year colleges and just 56 new 4-year colleges.

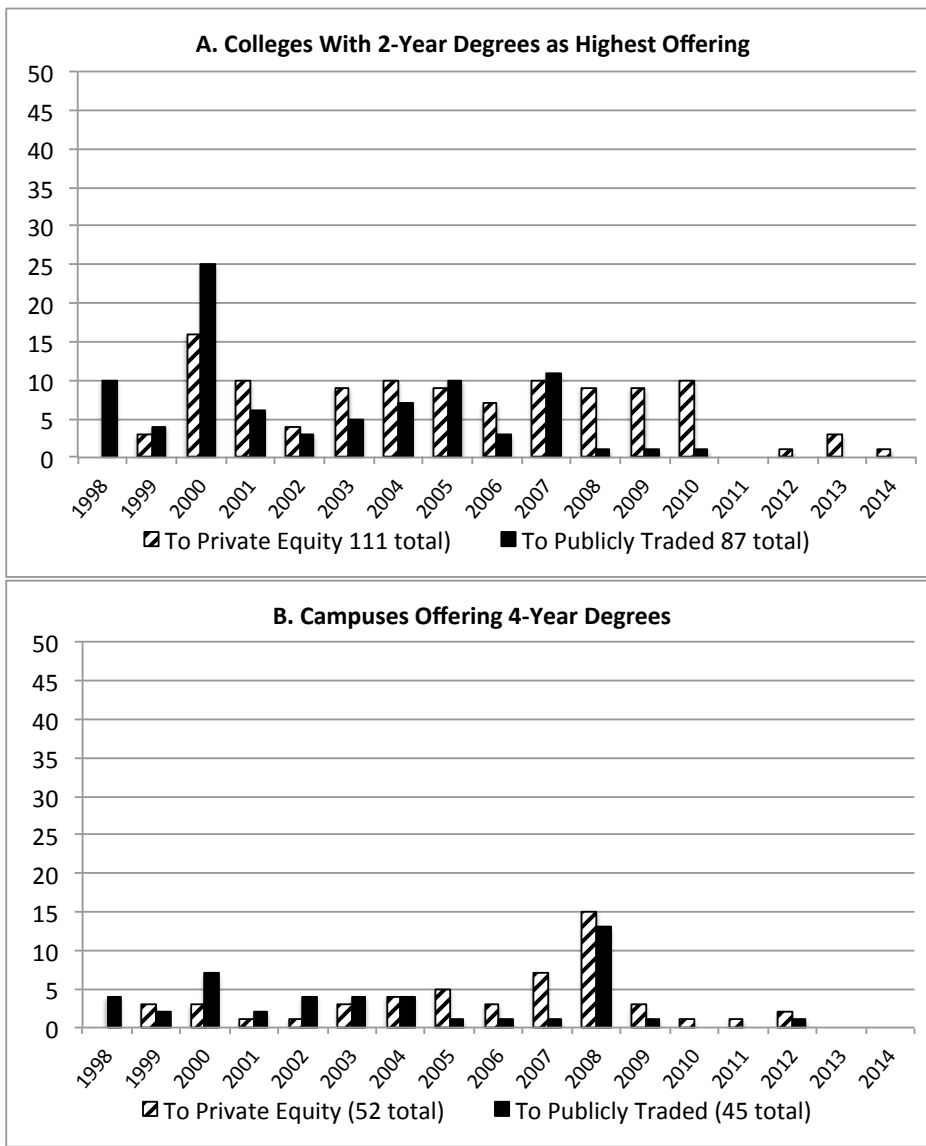
Figure 4: Openings of New Colleges Under Private Equity and Publicly Traded Ownership



Sources: IPEDS and author's original database of for-profit college firm ownership.

On the other hand, Figure 5 shows that changes in ownership at existing colleges played a larger relative role in the spread of private equity ownership. This fits with the contention that private equity niche predators were challengers that would rely more on acquisitions to enter the sector. Private equity grew its number of 2-year colleges through almost as many acquisitions (111) as its new college openings. Private equity also grew its number of 4-year colleges through nearly twice as many acquisitions (152) as its new college openings. Publicly traded firms meanwhile grew much less through ownership changes at 2-year colleges (87) than through new openings. Publicly traded firms also had much less growth among 4-year colleges through ownership form changes (45) than through new college openings. Of these 132 college-level changes to publicly traded ownership, 108 occurred through acquisitions as opposed to IPOs.

Figure 5: Changes in Ownership Form from Privately Held to Private Equity or Publicly Traded

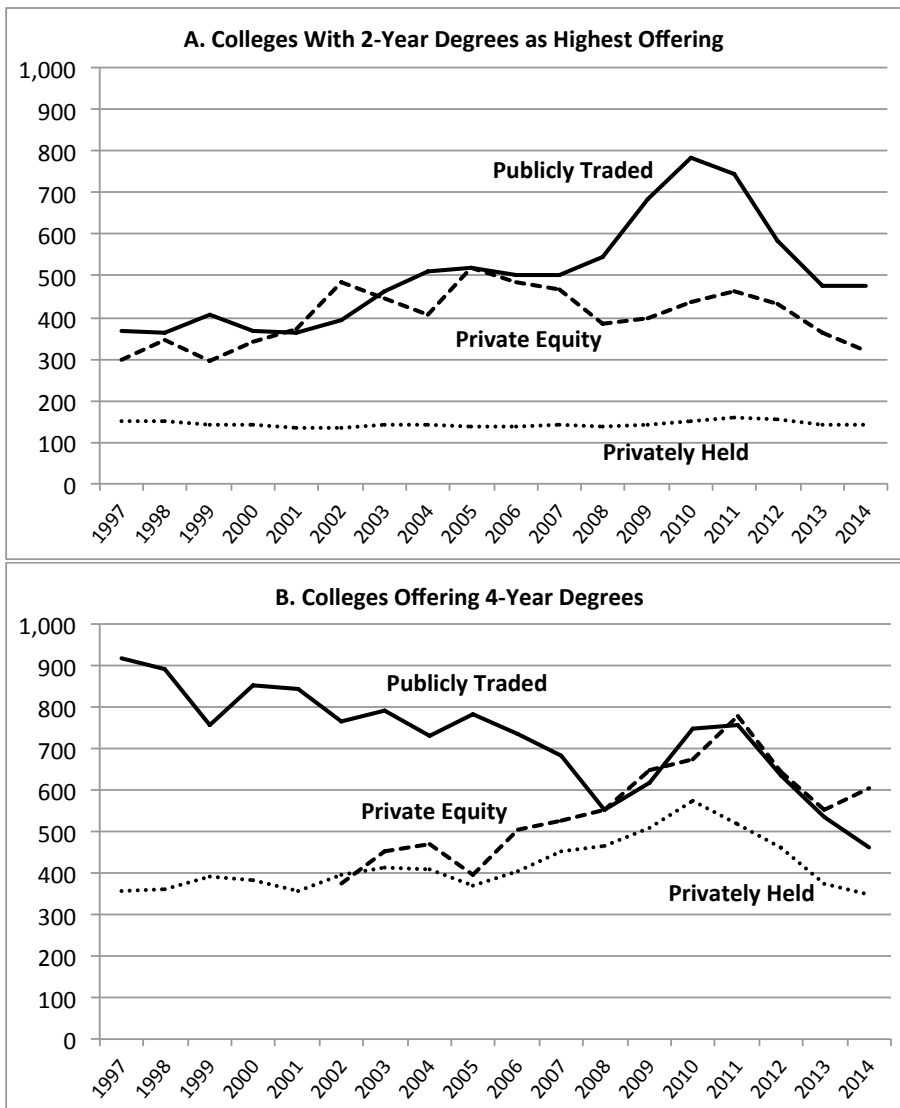


Sources: IPEDS and author’s original database of for-profit college firm ownership.

Shareholder Value and Enrollments

Figure 6 provides preliminary support for Hypothesis 2A that college-level enrollments will be higher under shareholder value ownership because of the new industrial-scale business model. Figure 6A shows that median fall enrollments were especially higher at 2-year colleges under publicly traded ownership (400 to 800) and private equity ownership (300 to 500) than under privately held ownership (150). Figure 7B shows that median enrollments for 4-year colleges were also higher under publicly traded ownership (500 to 900) and privately held ownership (400 to 800) than under privately held ownership (400 to 600).

Figure 6: Median Fall Undergrad Enrollment By Ownership Form and Highest Degree Offered

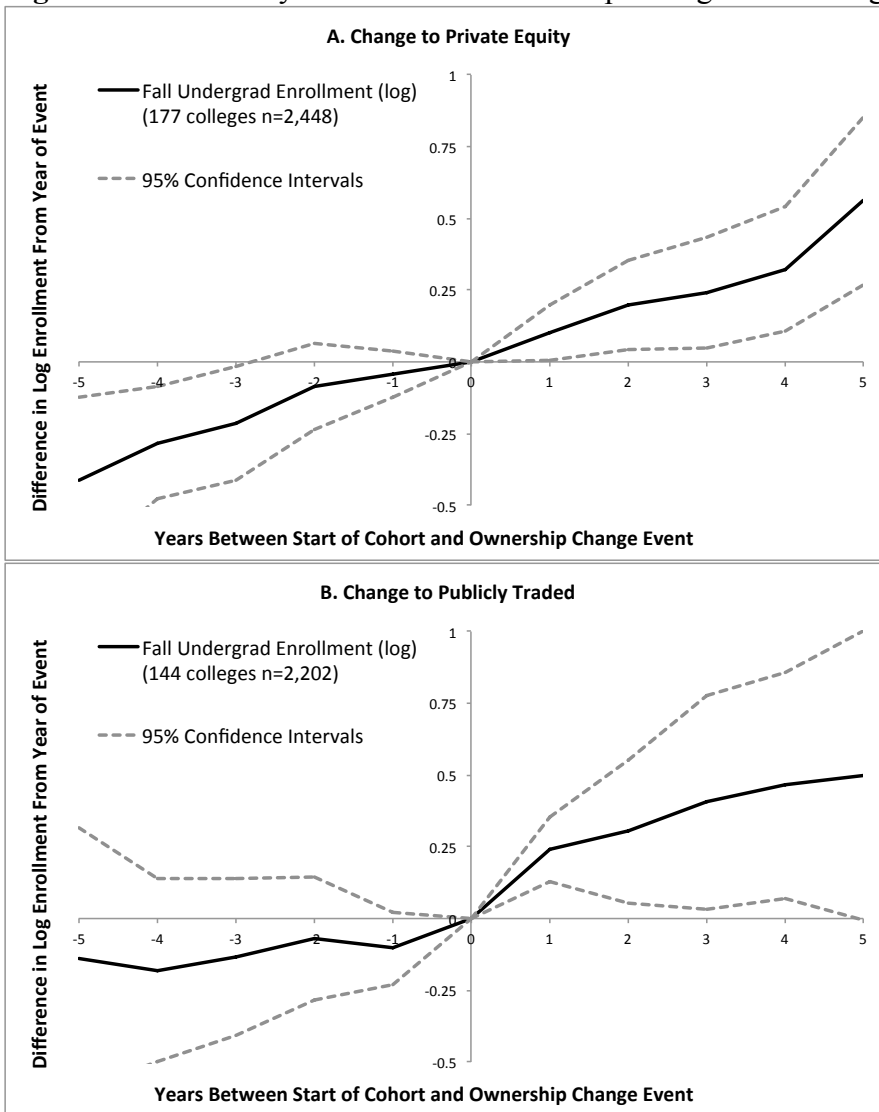


Sources: IPEDS and author’s original database of for-profit college firm ownership.

Notes: Median enrollments for private equity owned colleges are suppressed prior to 2002 because private equity firms operated only 10 or fewer 4-year colleges during those years.

Figure 7 provides event study estimates that test Hypotheses 2B and 2C regarding the relationship between changes in ownership form and enrollment. Figure 7A provides support for Hypothesis 2B that private equity will acquire colleges that already have growing enrollment because they are already implementing the industrial-scale model. Figure 7B supports Hypothesis 2C that change to publicly traded ownership will lead to new enrollment growth because publicly traded firms will acquire colleges that are not already implementing the new industrial-recruitment model. This shift is apparent in Figure 7B even though the event study models include controls for highest degree offered as well as college, year, and state-by-year fixed effects to control for other potential unobserved factors.

Figure 7: Event Study Estimates for Ownership Change and Undergrad Enrollment (log)



Notes: Estimates include college, year, and state-by-year fixed effects as well as dummy variables to control for highest degree offered. 95% confidence intervals are based on cluster-robust standard errors for clusters of colleges by firm at the time of the ownership form change.

Table 3 reports results from longitudinal panel fixed effects models that provide additional support for Hypotheses 2B and 2C regarding changes in ownership form and enrollment growth. Models 1 through 4 report estimates for changes to private equity ownership and Models 5 through 8 report comparable models for changes to publicly traded ownership. Notably, the estimated effect of ownership change on enrollment is not diminished when state-by-year effects are added to after Models 1 and 5, suggesting that enrollment growth was not merely a function of private equity and publicly traded ownership spreading to colleges in states where for-profit colleges could provide higher education to satisfy demand unmet by traditional non-profits, publics, and for-profits. Contrary to the suggestion by Deming et al (2012), chain ownership and non-selective admissions are found to have no consistent or significant effects on college-level enrollment levels after they are added in Models 3, 4, 7, and 8. Online offerings do have a strong positive effect on enrollment levels in these model. Adding an indicator for online offerings to these models, however, does not diminish the effect of shareholder value ownership on enrollment. The estimated effects of shareholder value ownership also remain strong when privately held colleges without ownership changes are added as counterfactuals in Model 4 and Model 8. Finally, the estimated effect of private equity ownership is not as strong as that of publicly traded ownership. This is consistent with estimates from the event study models in Figure 7 showing that enrollment increases at colleges prior to private equity ownership.

Table 3: Fixed Effects Estimates for Ownership Form Changes and Institutions' Total Undergraduate Enrollment

	To Private Equity Ownership			To Publicly Traded Ownership				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ownership Form Change	0.197 *	0.199 *	0.205 *	0.197 *	0.412 *	0.387 *	0.391 *	0.364 **
	(.092)	(.092)	(.089)	(.086)	0.161	0.162	(.163)	(.136)
4-Year Degrees Offered	0.292 *	0.279 *	0.268 *	0.254 *	0.27 *	0.231	0.224	0.177
	(.115)	(.116)	(.116)	(.112)	(.121)	0.122	(.117)	(.093)
Non-Selective Admissions			-0.039	-0.026			-0.016	-0.013
			(.092)	(.083)			(.12)	(.09)
Chain Ownership			-0.024	-0.037			-0.026	0.016
			(.087)	(.078)			(.083)	(.061)
Online Offerings			0.359 **	0.311 ***			0.353 *	0.296 **
			(.122)	(.092)			(.14)	(.103)
Constant	5.46 ***	6.941 ***	6.961 ***	6.945 ***	5.385 ***	6.82 ***	6.493 ***	6.961 ***
	(.144)	(.119)	(.115)	(.098)	(.275)	(.071)	(.151)	(.074)
R-squared	0.26	0.26	0.26	0.15	0.31	0.31	0.32	0.14
Institution-years	2,448	2,448	2,448	3,177	2,202	2,202	2,202	3,301
Institutions	177	177	177	1,404	144	144	144	1,408
Controls for Highest Degree Offered	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes

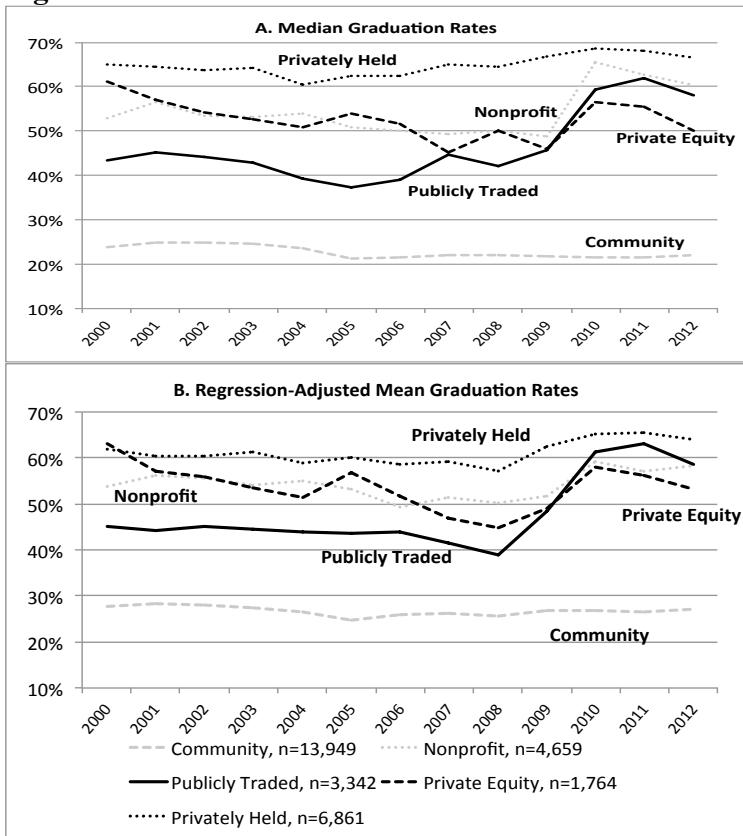
Note: Cluster-robust standard errors are in parentheses for clusters of campuses by firm at the time of the ownership form change event.

* p<0.05, ** p<0.01, *** p<0.001

Student Outcomes: Graduation Rates

Comparisons of graduation rates across ownership forms provide preliminary support for Hypothesis 3A that student outcomes will be worse under shareholder value because of excesses in the implementation of the industrial-scale model. Figure 8A shows that at less educationally intensive 2-year colleges, median graduation rates under private equity and publicly traded ownership match those of non-profits and exceed those of community colleges. Privately held for-profits, however, have the highest graduation rates across all years for which data is available. The strength of privately held for-profit graduation rates suggests it may be inappropriate to assume that all for-profits are agile predators. Figure 8B shows that the superiority of mean graduation rates for 2-year privately held colleges also holds up in all years after OLS regression adjustments for state, admissions selectivity, and the share of cohorts' students from demographic groups and the low-income Pell Grant recipient category. The comparison of graduation rates to those under privately held and non-profit ownership is probably more informative than the comparison with community college graduation rates which may include continuing education students with little intention of completing a degree or transferring to a 4-year college.

Figure 8: Graduation Rates for Fulltime Freshmen at 2-Year Colleges

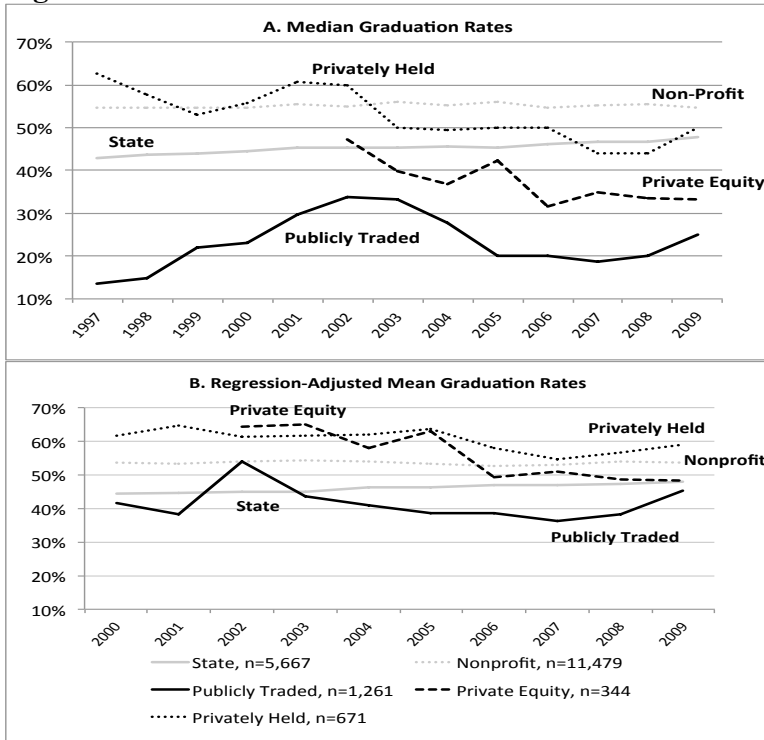


Sources: IPEDS and author's original database of for-profit college firm ownership.

Notes: Regression adjustments estimate graduation rates with state, selectivity, cohort gender-race, and Pell Grant recipient shares held constant at each year's means for all public, non-profit, and for-profit colleges.

Figure 9 provides even stronger support for Hypothesis 3A by showing that graduation rates for fulltime freshmen seeking 4-year degrees were far worse under shareholder value in comparison to privately held, non-profit, and state schools. Figure 9A shows that median graduation rates under publicly traded ownership fluctuated between just 14% and 34% from 1997 to 2009, the only years for which data is available. Graduation rates are only reported for cohorts at private equity owned colleges entering from 2002 on because fewer than 10 such colleges reported 4-year degree graduation rates in prior years. An increasing number of colleges under private equity ownership reported graduation rates for 4-year degree programs following years. As the number of reporting private equity colleges increased, median graduation rates fell well below 40% and below median rates for state, non-profit and privately held schools. Figure 9B shows that the disparity in graduation rates tightens after OLS regression adjustments for state, admissions selectivity, and the share of cohorts' students from demographic groups and the low-income Pell Grant recipient status (this adjustment is only possible for years after 2000, the first year for which data on fulltime freshmen Pell recipients is available). Still, the disparities persist in most years and privately held schools again have superior graduation rates that compare favorably even with state and non-profit schools.

Figure 9: Graduation Rates for Fulltime Freshmen in Bachelor Degree Programs



Sources: IPEDS and author's original database of for-profit college firm ownership.

Notes: Regression adjustments estimate graduation rates with state, selectivity, cohort gender-race, and Pell Grant recipient shares held constant at each year's means for all public, non-profit, and for-profit colleges.

Figure 10 reports event study estimates for changes in ownership form and graduation rates that provide strong support for Hypotheses 3B and 3C. Figure 10C

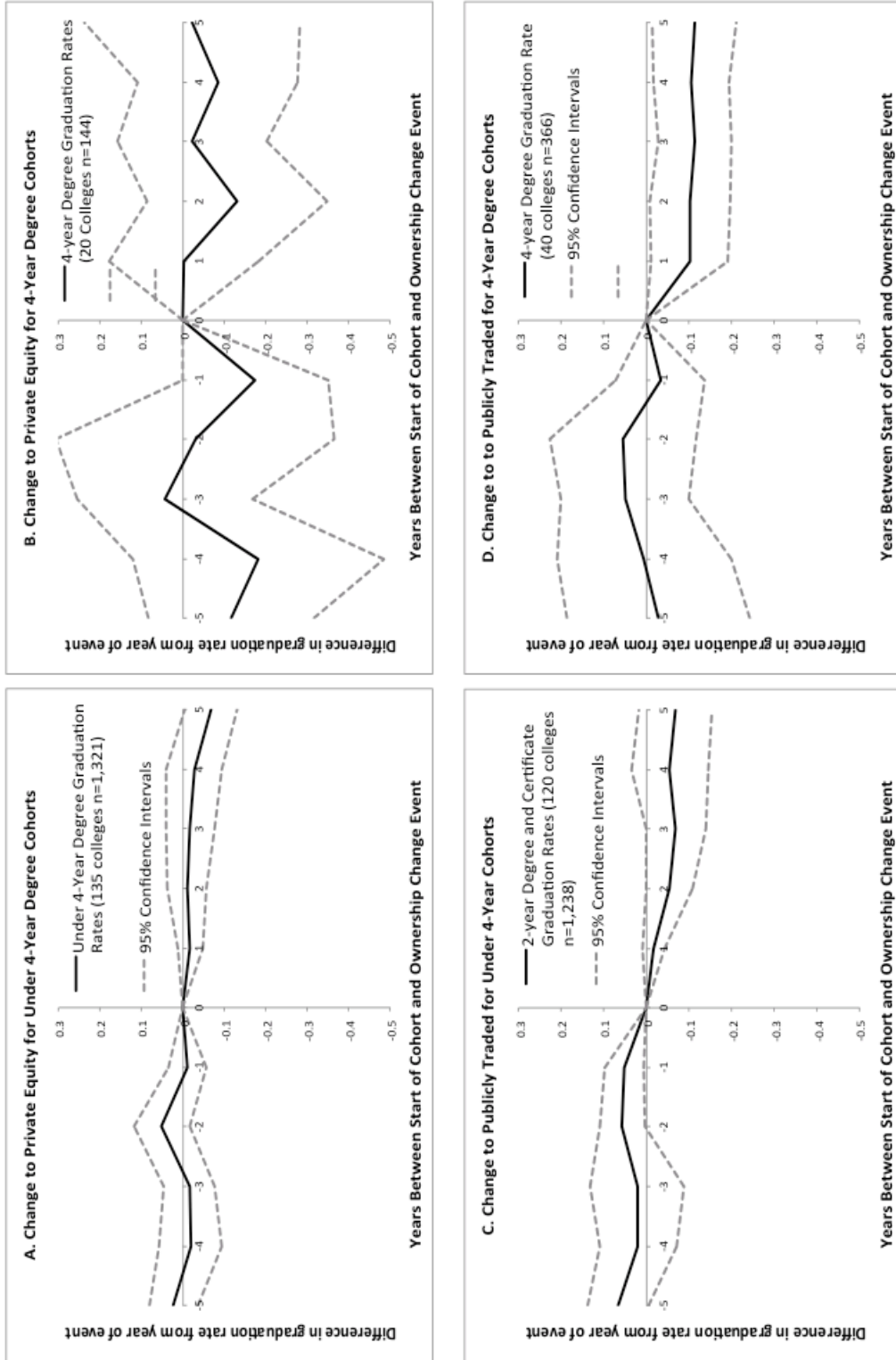
shows a clear shift towards lower graduation rates at 2-year colleges after changing to publicly traded ownership. Figure 10D shows an even clearer discrete shift to lower graduation rates for 4-year degree seekers after changes to publicly traded ownership. This shift remains apparent even though the event study models include college, year, and state-by-year fixed effects to control for other potential unobserved factors. Figures 10A and 10B show no clear shift after changes to private equity ownership in either case. This is consistent with the Hypothesis 3B that private equity would take an ownership stake in colleges that were already implementing an industrial-recruitment model.

Longitudinal panel fixed effects models for graduation rates provide further support for Hypotheses 3B and 3C on ownership changes and student outcomes. Table 4 reports fixed effects estimates for graduation rates at 2-year college. Models 1 through 4 again show no consistent effect from changes to private equity ownership, consistent with the expectation that private equity mainly acquires colleges that are already implementing the industrial-scale model. Models 5 through 8, however, estimate a consistent, strong, and statistically significant negative effect on 2-year college graduation rates from changes to publicly traded ownership. This estimate holds in Models 6 through 8, which include admissions selectivity, cohort socio-economic status variables. Notably, the estimated effect of publicly traded ownership weakens in Model 7 when we add online offerings and total college undergrad enrollment to the model as indicators of an industrial-scale enrollment strategy. Only undergrad enrollment is found here to have a statistically significant effect, however, reflecting the lower prevalence of online offerings at 2-year colleges. This conforms to the expectation that the negative influence of shareholder value on graduation rates occurs through implementation of the industrial-scale model. This contention is also supported by the strong negative effect from higher enrollments on graduation rates that is estimated in Models 4 and 8, which include privately held colleges with no ownership change as a counterfactual.

Table 5 shows similar results from fixed effects estimates for graduation rates among 4-year degree cohorts. Models 1 through 4 estimate no consistent or statistically significant effects from changes to private equity ownership. These estimates should be treated with particular caution, however, given that only 20 colleges reported 4-year degree graduation rates both before and after ownership changes to private equity. Models 5 through 8 consistently estimate negative effects from publicly traded ownership. The estimated effect again holds in Model 5, which adds variables for admissions selectivity, and cohort socio-economic status variables. The estimated effect of publicly traded ownership also weakens once again in Model 7 when we add online offerings and total college undergrad enrollment to the model as indicators of industrial-scale enrollment. Only online offerings are found here to have a statistically significant effect reflecting, however. This suggests that online offerings are a particularly problematic for student outcomes under the industrial-scale enrollment model. The estimated effects remain in Model 8, which includes privately held colleges with no ownership change as a counterfactual.

It is also possible to estimate models for graduation rates for individual demographic groups within cohorts such as African American women, and Hispanic men. Estimates for each individual cohort group tend to conform to estimates reported here. Models for each cohort group are provided in Appendix A.

Figure 10: Event Study Estimates for Full Time Freshmen Graduation Rates



Notes: Estimates use college, year, and state by year fixed effects. 95% confidence intervals are based on cluster-robust standard errors for clusters of colleges by firm at the time of the ownership form change event.

Table 4: Fixed Effects Estimates for Graduation Rates at Colleges With Highest Offering of 2-Year Degrees

	To Private Equity Ownership			To Publicly Traded Ownership				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ownership Form Change	-0.009 (.025)	-0.003 (.026)	0.007 (.025)	0.031 (.021)	-0.061 *** (.017)	-0.05 ** (.017)	-0.04 (.022)	-0.024 (.02)
Non-Selective Admissions		-0.012 (.026)	-0.013 (.027)	-0.004 (.017)		0.013 (.024)	0.013 (.022)	0.004 (.02)
Chain Ownership			-0.047 * (.02)	-0.052 ** (.018)			-0.02 (.039)	-0.05 (.026)
Online Offerings			-0.011 (.033)	-0.019 (.026)			-0.007 (.021)	0.003 (.023)
Total Undergrad Enrollment (log)			-0.027 * (.013)	-0.022 * (.011)			-0.03 ** (.012)	-0.024 * (.011)
Constant	0.445 *** (.071)	0.2 (.111)	0.406 *** (.096)	0.464 *** (.087)	1.03 *** (.049)	1.016 *** (.096)	1.227 *** (.091)	0.651 *** (.093)
R-squared	0.039	0.076	0.081	0.02	0.183	0.175	0.179	0.027
Institution-years	1,321	1,134	1,109	1,611	1,238	1,031	1,013	1,623
Institutions	135	134	134	950	120	119	119	965
Cohort Socio-Economic Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Cluster-robust standard errors are in parentheses for clusters of campuses by firm at the time of the ownership form change event.

* p<0.05, ** p<0.01, *** p<0.001

Table 5: Fixed Effects Estimates for Graduation Rates for 4-Year Degree Programs

	To Private Equity Ownership			To Publicly Traded Ownership				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ownership Form Change	0.016 (.06)	0.041 (.085)	0.017 (.087)	-0.023 (.072)	-0.103 ** (.037)	-0.077 (.04)	-0.024 (.028)	-0.096 *** (.029)
Non-Selective Admissions		0.209 *** (.063)	0.242 *** (.061)	0.071 (.041)		-0.051 * 0.022	-0.061 *** (.017)	-0.015 (.019)
Chain Ownership			0.157 * (.079)	-0.077 (.06)			-0.286 *** (.059)	-0.121 * (.052)
Online Offerings			0.092 (.106)	-0.07 (.034)			-0.042 * (.019)	-0.061 * (.028)
Total Undergrad Enrollment (log)			0 (.029)	-0.001 (.018)			-0.007 (.01)	-0.016 (.018)
Constant	0.364 (.255)	0.401 (.683)	0.081 (.851)	0.478 * (.292)	0.492 *** (.057)	0.492 *** (.074)	0.778 *** (.156)	0.571 ** (.196)
R-squared	0.105	0.297	0.314	0.029	0.21	0.209	0.208	0.038
Institution-years	144	123	122	265	366	297	291	395
Institutions	20	20	20	131	40	40	40	143
Cohort Socio-Economic Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Cluster-robust standard errors are in parentheses for clusters of campuses by firm at the time of the ownership form change event.

* p<0.05, ** p<0.01, *** p<0.001

Student Outcomes: Loan Repayment

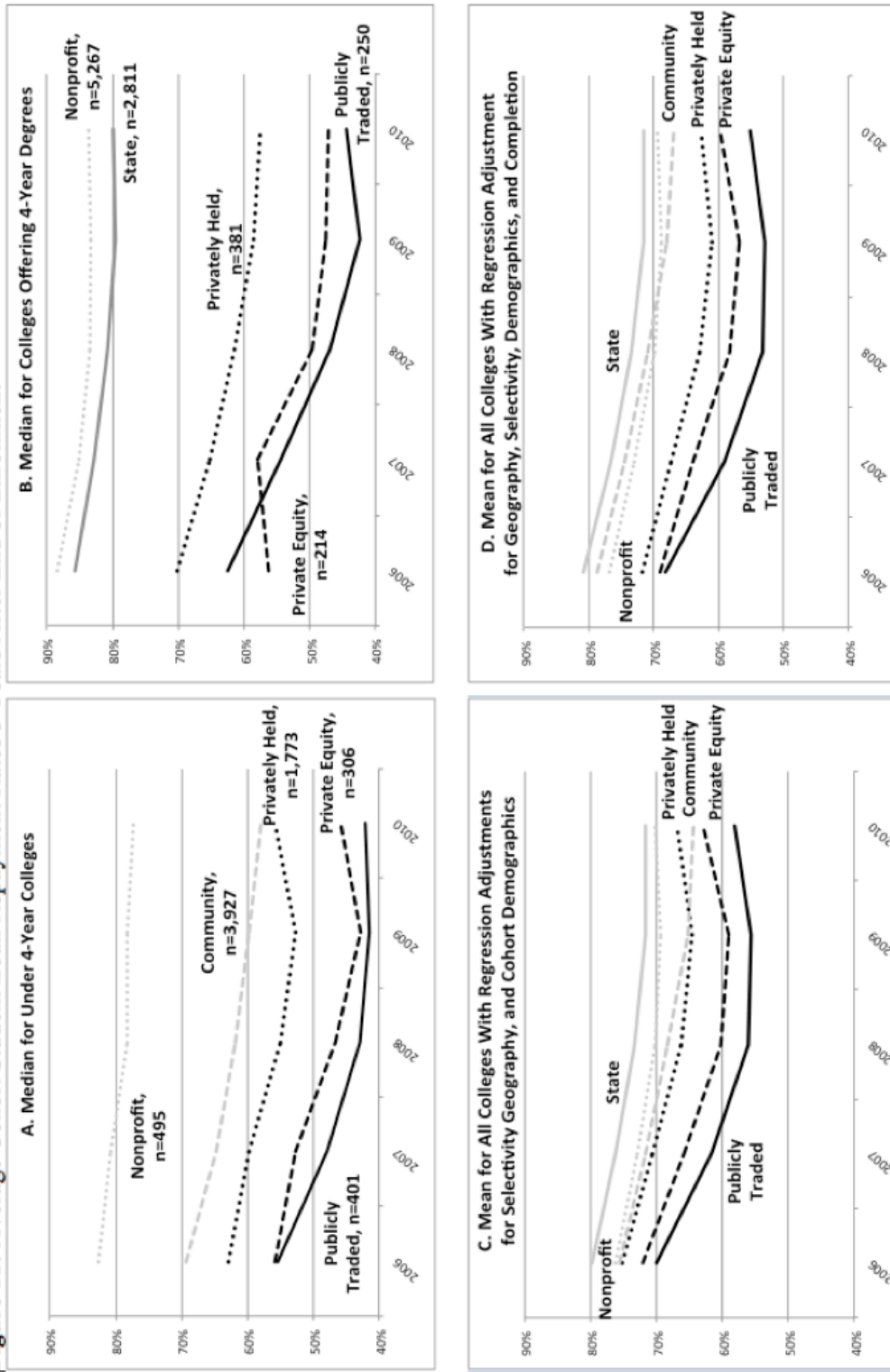
Figure 11 reports results on student loan repayment rates that support Hypothesis 3A about exceptionally poor student outcomes under shareholder value. Figure 11A shows that median loan repayment rates for both publicly traded and private equity 2-year for-profits fell to just over 40% after 2008, almost 20% lower than for community colleges. Figure 11B shows that the disparity was even worse for colleges offering 4-year degrees. Under both shareholder value ownership forms, median repayment rates for 4-year schools also fell below 45%, more than 30% worse than at state and non-profit 4-year schools. Figure 11C shows estimates for repayment rates as between 8% to 15% worse under shareholder value than at state and non-profit schools after regression adjustment for selectivity, geography, highest degree offered, and cohort demographics. The estimated disparity is smaller at community colleges, particularly after the onset of the Great Recession in 2008. Finally, Figure 11D, shows even greater disparities in mean repayment rates after graduation rates are added to regression adjustments. This suggests poor loan repayment rates are not only a consequence of poor graduation rates under shareholder value and the new business model.

Notably, Figures 11A and 11B show that median student loan repayment rates at privately held for-profits were 10% higher than under shareholder value ownership forms at both 2-year and 4-year colleges. Moreover, Figure 11C shows that mean student loan repayment rates at privately held colleges are comparable to those at community colleges after regression adjustment for selectivity, geography, highest degree offered, and cohort demographics. Estimated mean repayment rates are consistently better for community colleges, however, when graduation rates are added to the regression adjustment. This reflects that privately held for-profits have higher average graduation rates but also higher average student loan burdens for tuition than at community colleges.

Figure 12 reports event study results for student loans that conform to Hypotheses 3B and 3C regarding changes in ownership form and student outcomes. Event study estimates for student loan repayment rates, however, must be treated with particular caution because we have only 5 years of data for just 26 colleges that changed to private equity ownership and just 22 colleges that changed to publicly traded ownership. Nevertheless, Figure 12A provides results that match my expectation that changes from privately held to private equity ownership will not result in a shift in student loan repayment rates because private equity acquires colleges that are already implementing the new business model. Again as expected, Figure 12B shows that estimated student loan repayments are relatively steady prior to changes to publicly traded ownership but then decline over 10% in 2 years.

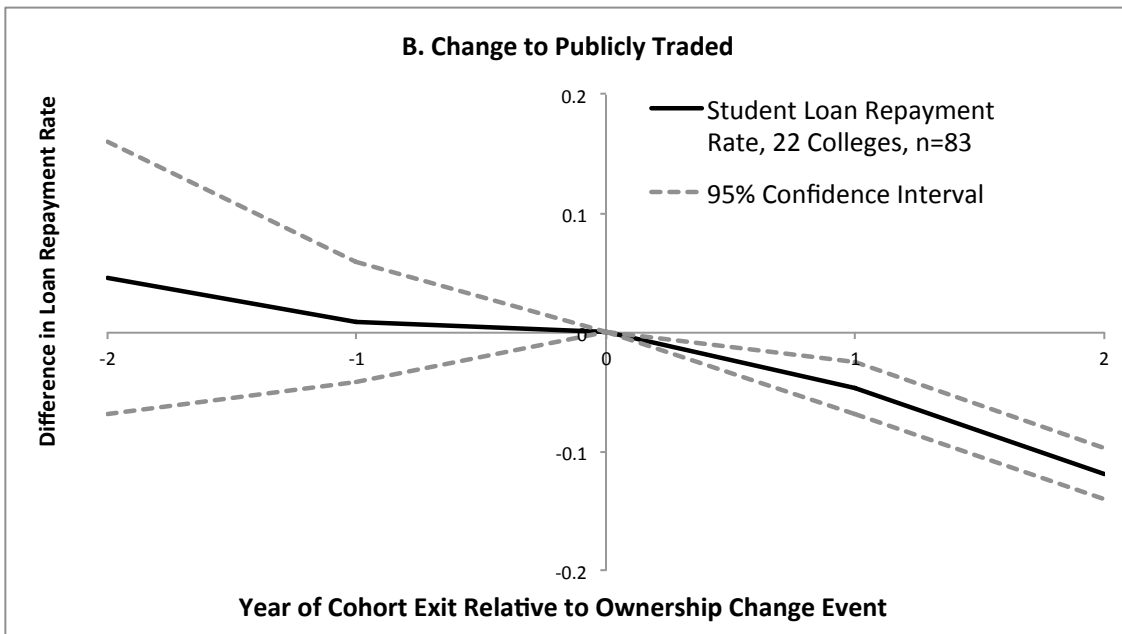
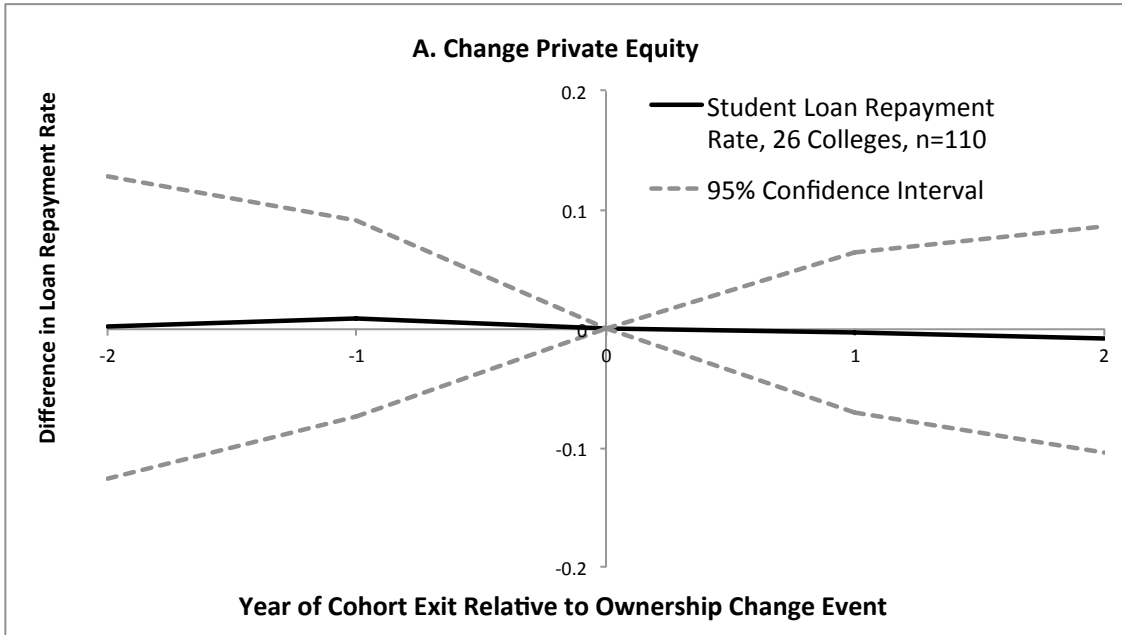
Fixed effects estimates for student loan repayment rates must also be treated with caution because of the limited available data. Table 6 shows fixed effects estimates that are more mixed but generally in line with Hypotheses 3B and 3C regarding ownership form changes and student outcomes. As expected, Model 1 shows almost zero effect on loan repayment rates from changes to private equity ownership. But a small, statistically insignificant effect is estimated in Models 2 through 4 after covariates are added for other organizational characteristics and average cohort socio-economic variables. I estimate a stronger and statistically significant effect for private equity ownership in Model 5 in which privately held colleges with no ownership change are added as a counterfactual.

Figure 11: Average Cohort Student Loan Repayment Rates 3 Years After End of Enrollment



Notes: Regression adjustments estimate repayment rates while holding constant at means for each year the coefficients for state, selectivity, highest degree offered, low income student share, Pell recipient share, dependent student share, female student share, first generation student share, and share of students that graduated.

Figure 12: Event Study Estimates for Exiting Cohort Loan Repayment Rates



Notes: Estimates include college, year, and state-by-year fixed effects as well as dummy variables to control for highest degree offered. 95% confidence intervals are based on cluster-robust standard errors for clusters of colleges by firm at the time of the ownership form change.

Table 6: Fixed Effects Estimates for Student Loan Repayment Rates

	To Private Equity Ownership			To Publicly Traded Ownership						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ownership Form Change	-0.003 (.027)	-0.02 (.017)	-0.021 (.017)	-0.02 (.018)	-0.05 ** (.018)	-0.027 (.03)	0.002 (.055)	-0.003 (.055)	-0.004 (.057)	-0.056 (.029)
4-Year Degrees Offered	0.003 (.038)	-0.001 (.027)	0.008 (.028)	0.015 (.031)	0.046 * (.02)	-0.1 ** (.034)	-0.132 *** (.032)	-0.124 *** (.03)	-0.132 *** (.028)	0.012 (.034)
Non-Selective Admissions		-0.07 (.038)	-0.072 (.038)	-0.064 (.039)	-0.032 (.038)	0 (.038)	0 (.038)	0 (.038)	0 (.038)	-0.006 (.025)
Chain Ownership		-0.026 (.018)	-0.027 (.018)	-0.019 (.015)	-0.015 (.015)	0.026 (.022)	0.026 (.022)	0.022 (.022)	0.025 (.023)	0.008 (.011)
Online Offerings		-0.021 (.025)	-0.018 (.025)	-0.012 (.027)	-0.043 * (.017)	-0.057 (.048)	-0.057 (.048)	-0.058 (.053)	-0.063 (.046)	-0.042 *** (.012)
Undergrad Enrollment (log)			-0.006 (.009)	-0.004 (.008)	-0.011 (.008)	-0.014 ** (.005)	-0.014 ** (.005)	-0.014 ** (.005)	-0.014 ** (.007)	-0.004 (.007)
Graduation Rate for Exiting Cohort			0.005 (.054)	0.052 (.067)	0.005 (.054)					0.089 (.062)
Constant	0.58 *** (.04)	1.145 *** (.146)	1.147 *** (.148)	1.141 *** (.147)	1.042 *** (.183)	0.711 *** (.066)	1.157 *** (.211)	1.259 *** (.256)	1.244 *** (.244)	0.85 *** (.176)
R-squared	0.527	0.755	0.761	0.761	0.355	0.749	0.855	0.856	0.859	0.305
Institution-years	110	100	100	100	131	83	53	53	53	112
Institutions	26	24	24	24	422	22	18	18	18	424
Cohort Socio-Economic Controls	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Cluster-robust standard errors are in parentheses for clusters of campuses by firm at the time of the ownership form change event.

* p<0.05, ** p<0.01, *** p<0.001

As expected, Model 6 estimates a negative effect from changes to publicly traded ownership. The estimated effect, however, is statistically insignificant. The estimated effect of $-.027$ also appears weaker than event study estimates that show loan repayment rates falling by more than 10% after 2 years. The apparent difference reflects that available data is unbalanced and abbreviated with few observations for colleges after the 1st year following changes to publicly traded ownership when the estimated change in loan repayment rates was closer to $-.027$. The limitation of these results is further underscored by Models 7 through 9, which show no effect from shareholder value ownership after adding other covariates for chain, online, and cohort demographic variables. Estimated negative effects from online offerings and increased undergraduate enrollment could reflect that publicly traded ownership is negatively acting on student loan repayment rates through those components of the industrial-scale business model. Stronger and more statistically significant effects, moreover, are estimated for publicly traded ownership and online offerings in Model 10 when privately held colleges with no ownership change are added as a counterfactual. Still, these inferences are tenuous for the reasons I have explained.

Discussion and Conclusions

The combined results show that shareholder value ideology and ownership forms were critical factors in the transformation of for-profit colleges since the 1990s. As we have seen, private equity provides capital and financing expertise to privately held colleges that behaved as *niche predators*, already implementing the new industrial-scale recruitment model as they seek to secure their foothold in the less competitive market for 2-year degree programs. This fits with the institutionalist concept of shareholder value as an ideology (Dobbin and Zorn 2005; Fligstein and Shin 2007; Fligstein 1993) with which the industrial-recruitment model is commensurate. This finding also suggests that shareholder value ideology can take root without shareholder value ownership structures already being in place. Nevertheless, few for-profit college firms became publicly traded *invasive predators* without private equity backing prior to going public.

In contrast to colleges under private equity ownership, the publicly traded *invasive predators* expanded both in the 2-year market and the more competitive 4-year market. This contradicts the implications of agency theory and accumulation regime theories that private equity and publicly traded firms will act the same because their ownership arrangements provide equivalent interest alignments, profit pressures, and capital resources.

The results also fit best with the accumulation regime and institutionalist expectations that the implementation of the industrial-recruitment model under private equity and publicly traded colleges is likely to contribute to unusually poor graduation rates and student loan repayment rates. I find that graduation and loan repayment rates remain much worse under shareholder value even in estimates that adjust for admissions selectivity and cohort socio-economic factors. This supports that contention that industrial-scale model suffers from aggressively low spending on instruction and student support (U.S. Senate Committee on Health Education Labor and Pensions 2012) that is consistent with shareholder value strategies for cost-cutting (Fligstein and Shin 2007; Goldstein 2012; Gordon 1996). The poor graduation and student loan repayment rates contradict the implication of agency theory that by aligning investor and manager

interests, shareholder value arrangements would encourage firms to mitigate poor student outcomes that could trigger consumer and regulatory backlash (Dobbin and Jung 2010).

By providing the most rigorous evidence to date of negative effects from shareholder value on consumers and an area of social policy, these findings add important dimensions to theories for how shareholder value ideology promotes risk-taking and even malfeasance for short-term gain (Dobbin and Zorn 2005). It would be fair to ask if extremely poor graduation and student loan repayment rates were indeed risky. The collapse in for-profit enrollments since 2011, particularly under publicly traded and private equity owned firms (see Figure 1), supports the argument that it was indeed risky to use a business model with such poor student outcomes. The end of the Great Recession almost certainly played a role in the large declines in enrollment since 2011. An escalating crackdown by state and federal regulators, however, has also played a key role. Notably, the federal government barred a key tool for the industrial-scale model – the payment of bonuses to recruiters of students receiving federal aid. The Department of Education has also acted to deny eligibility for enrolling students with federal student aid at for-profits with consistently low student loan repayment rates and post-college employment rates.

Aside from the potentially blinding power of shareholder value ideology, it is difficult to explain how executives at private equity and publicly traded college firms could fail to anticipate the risks to their business of such extraordinarily poor student outcomes. Graduation rates for 4-year degree programs after 26 were just under 35% under private equity ownership and just over 20% under publicly traded ownership. These graduation rates, moreover, are for fulltime freshmen who probably have much better odds at graduation than the large number of part-time students at for-profits for whom little reliable data is available. Meanwhile, for-profits under both forms of shareholder value saddled students with federal student loan packages that ended up being impossible to repay for over 55% of students. In the wake of such poor outcomes, the likelihood of public outrage and costly regulatory backlash is obvious outside of the shareholder value worldview.

The free fall that has followed for-profit college risk-taking has been particularly acute at 5 of the 7 biggest publicly traded companies. Corinthian Colleges has been entirely liquidated through bankruptcy proceedings. ITT has been placed under the same heightened cash monitoring status that preceded the fall of Corinthian. Career Education Corporation, DeVry, and EDMC, meanwhile, have closed dozens of colleges – primarily among their bachelor degree offering chains. In a sign that dismal graduation and loan repayment rates are just the most measurable negative effects of the spread to for-profit colleges of shareholder value, numerous states attorney generals and the SEC have sued a cavalcade of publicly traded and private equity owned firms for fraud involving student loans.

The findings are also important for research on college institutional characteristics and potential paths for growing college attainment (Shavit, Arum, and Gamoran 2007; Stevens, Armstrong, and Arum 2008; Stevens and Gebre-Medhin 2016). Absent the expansion of state, non-profit, and community college institutions, for-profit colleges remain important organizations for providing publicly supported higher education. For-profits expanded particularly among under-privileged and non-traditional students who were underserved by existing non-profit, state, and community colleges (Deming, Goldin,

and Katz 2012). Research has also shown that under-represented students of color and low-income students in particular fare worse at for-profits than at state or non-profit schools (Gelbgiser 2015). My findings of success by privately held colleges point to the potential of for-profits to fill the void left when state and community colleges cannot expand fast enough in areas of growing demand for vocational training.

To better understand the possibilities and risks of for-profits, however, further research could more closely examine the exact practices under the new industrial-scale model that yield worse outcomes as well as the activities at traditional models of privately held colleges that fare better. Such research could also examine if privately held colleges with declining graduation and student loan repayment rates suffer from adopting practices similar to their private equity or publicly traded counterparts due to competitive or social pressures. After all, the findings of this paper show that graduation rates also declined at privately held colleges where student loan repayment rates also left much to be desired. Moreover, I have reported findings that private equity mainly acquires privately held colleges that appear already to be implementing the new industrial-scale model. Could this have been part of a largely ideological pull of shareholder value that spreads shareholder value strategies even absent private equity or public traded ownership?

These questions about privately held for-profit colleges suggest an additional need for broader research on the extent to which shareholder value reaches into privately held firms throughout the economy. More than 99% of U.S. businesses are privately held and they account for a substantial if not majority share of U.S private sector economic activity (Astrachan and Shanker 2003). Yet economic and organizational sociologists know surprisingly little about the undoubtedly social form of privately held business. The control of privately held firms by private equity is in one sense an explicit and extreme case of shareholder value arrangements within privately held ownership. Scholarship on finance cultures has shown that broad swaths of America have increasingly used financial transactions and portfolio management concepts to manage household wealth and daily life (Davis 2009; Fligstein and Goldstein 2015). These concepts are linked to shareholder value concepts of ownership. Yet we know little about the extent or processes by which such shareholder value ideology and finance cultures may reach into privately held business.

Finally, the role of ownership form in for-profit college behavior speaks to the role of the state and of policy in organizing economic activity (Lounsbury and Hirsch 2010). This paper's findings suggest that shareholder value ownership arrangements increase the importance of the state and policies for protecting against malfeasance and facilitating equitable commerce in markets. On the other hand, state intervention may be less decisive in markets and social domains where privately held ownership predominates and shareholder value is less prevalent.

CHAPTER 4

The Ivory Tower Tax Haven: Prestige Maximization, Financialization, and the Case of Indirect Tax Arbitrage by Stanford University, 1989 to 2014

Even in the wake of the massive 20th century expansion of U.S. higher education, the system remains quite separate and unequal. "The separation is most apparent in that the top private universities still enroll a tiny fraction of all college students, a disproportionate share of whom are from wealthy households and the families of alumni (Karabel 2005, 521; Stevens 2009). Undergraduate education remains unequal in that there is a large and fast-growing disparity in spending per student on instruction and undergraduate life between the top private universities and the rest of the higher education system (H. E. Brady, Eaton, and Stiles 2014). In 2012 constant dollars, the average total spending per student increased from less than \$90,000 in 1987 to nearly \$138,000 in 2012 for the elite private schools that are members of the American Association of Universities.

The high spending levels of wealthy private universities, moreover, has come at an increasing public expense, primarily through growing tax expenditures. One revealing but understudied tax expenditure has occurred through universities' use of indirect tax arbitrage, a strategy of borrowing through tax-exempt municipal bonds to grow university financial investment returns (Congressional Budget Office 2010). Indirect tax arbitrage takes place when a university chooses to pay for capital projects by borrowing with municipal bonds rather than spending down some of their financial investment assets, because those financial assets tend to yield higher rates of return than the interest rate for municipal bond borrowing. Direct tax arbitrage, borrowing using municipal bonds to directly fund university financial investments, is prohibited by federal tax law because it would allow private investors to earn untaxed income on interest from lending through municipal bonds to finance an unlimited amount of university financial investment. Indirect tax arbitrage, however, was not anticipated when the federal income tax was created with an exemption for municipal bond interest. As a result, large university endowments now benefit from a triple tax break: 1) a tax deduction for donors to the endowment, 2) a tax exemption for investment income from the endowment as a non-profit institution, and 3) a tax exemption for income earned on interest by lenders who invest in municipal bonds.

This paper uses indirect tax arbitrage by Stanford University as a case study to provide a concrete, ground-up explanation of financialization as a broader process by which financial transactions and logics have become increasingly used to manage organizations and social life. I take up the case of Stanford in particular because, over the past 40 years, Stanford has ascended to match Harvard, Yale, and Princeton in terms of selectivity and prestige. This makes Stanford a useful case for understanding how the larger body of selective private universities may employ financial strategies as they try to increase their own prestige. Tracing Stanford's finances since 1989, the case study details how institutions like Stanford can operate as an ivory tower tax haven in which university managers and municipal bond investors achieve greater financial gains at the

expense of federal and state tax revenue.²⁹ The case study also shows how financial strategies like indirect tax arbitrage can contribute to shifts in the resources available for the many different functions of a university (Stevens, Armstrong, and Arum 2008); from creating knowledge through research and instruction (Aronowitz 2000; Parsons and Platt 1973) and instruction ; molding citizens (Loss 2011; Mettler 2005); and training workers (Shavit and Muller 1998); to conferring social status (Bourdieu and Passeron 1990; Collins 1979; Karabel 2005; Stevens 2009).

I weave together two previously unconnected threads of research and theory to explain why we should expect the rise of ivory tower tax havens that exploit the triple tax break of indirect tax arbitrage. First, higher education scholars have shown that at elite private colleges and universities, education costs tended to increase much faster than inflation because these schools have every incentive to spend as much as possible to maximize their prestige (Ehrenberg 2000; Winston 1999). As such, we should expect that Stanford would seek greater financial resources to use in ways that go the furthest toward maximize prestige.

Second, cultural approaches to financialization suggest that even non-financial firms have increasingly adopted financial investing as a central enterprise since the 1970s, with the aim of restoring stability and control amid market turbulence (Davis and Stout 1992; Davis 2009; Epstein 2005; Fligstein 2001; Krippner 2005, 2011). This logic can be extended to less studied fields of organizations such as non-profits and state entities, including elite universities (Eaton et al. 2016; van der Zwan 2014). In doing so, we can explain the adoption of indirect tax arbitrage and other yield-increasing financial strategies as a solution to the financial demands of university prestige competition. While such financial strategies can help solve resource problems at universities, they can also increase the costs of tax expenditure subsidies in unseen ways for activities of questionable social value.

The paper proceeds as follows. In the second section, I discuss further how theories of university prestige competition and financialization can be interwoven to explain the rise of indirect tax arbitrage at an elite university. Next, I situate the case by describing Stanford's academic activities, expenses, revenues, and endowment growth since 1989. Fourth, I document how Stanford used policies of indirect tax arbitrage to boost endowment growth, which in turn boosted spending on faculty and instruction and capital investment in amenities. Fifth, I detail estimates of the annual federal tax expenditures in support of Stanford's indirect tax arbitrage since 1998. Sixth, I conclude by discussing implications of the findings policy and for future research on social policy and financialization.

The Path to an Ivory Tower Tax Haven

Prestige Competition and Spending Growth at Elite Universities

Maximizing institutional prestige is an overriding goal for universities, especially in the case of elite institutions (Clotfelter 1996; James 1990). University managers and constituencies may strive for prestige as an ideal unto itself. Prestige, however, also enhances the ability of a university to generate three of its key sources of revenue: tuition, research grants, and donations (Hansmann 1981). Given these seemingly limitless social

²⁹ This paper was inspired in part by Henry Brady's unpublished memo in which he estimates Stanford's overall tax subsidy (2014) but does not consider tax subsidies from indirect tax arbitrage.

and economic returns from prestige, universities tend to spend as much as possible in order to maximize their prestige (Winston 1999). As such, we should expect that universities will pursue strategies, including financial investment strategies, that will increase university revenue without undermining prestige.

Under a commitment to maximizing prestige, we should also expect that increased resources from university financial strategies will primarily go towards activities that are most expected to boost prestige. Managers and university ranking schemes are said to give significant weight to admissions selectivity along with productivity in research and publication by faculty (Sauder 2007). Most university research spending is self-supported by grants, primarily from the federal government. Universities, however, could improve their profile for research and publication productivity by increasing spending to recruit and retain top faculty. We would see this in the disproportionate use of increased financial returns for spending on faculty and instruction, which as a reporting category also includes funding for academic department activities and research.³⁰

I will shortly elaborate how indirect tax arbitrage links endowment investment strategies with university borrowing for capital project investments. It should be said here, however, that ideas about university prestige competition imply that borrowing for capital projects would also go to investments that are thought to go furthest towards maximizing prestige. Economists have shown that spending on auxiliary services, tends to make it more likely that admissions offers will be accepted, particularly by wealthy students (Jacob, McCall, and Stange 2013). Most auxiliary service spending at U.S. universities is for fee-based amenities such dining halls, dormitories, recreation centers. Auxiliary service spending also includes collegiate sports which is thought to play an important role in university prestige systems (Lifschitz, Sauder, and Stevens 2014; Stevens 2009). Accordingly, we would expect that financial strategies would help to boost borrowing for investments in amenities and collegiate sports.

Financialization and Elite Universities

Financialization is fundamentally an increasing use of financial transactions and their logics (Epstein 2005; Krippner 2011; van der Zwan 2014). In financial transactions, one party provides liquid capital to another party in exchange for expected financial returns in the forms of interest, dividends, or capital gains (Krippner 2005, 174–175). Financial logics allow an actor to transpose the logic of financial transactions toward activities that were not previously organized through financial transactions. For example, decisions such as the internal distribution of resources within a household (Davis 2009; Langley 2008; Martin 2002) or an organization could become primarily guided by the financial principal that resources should be allocated towards activities which will yield the highest financial returns. Under one cultural view of financialization, one would expect an organization to engage in new financial transactions when it can make sense of how the transactions will help solve a problem (Fligstein 1993, 2001). As explained in the previous section, a fundamental problem for elite private universities is how to fund increased spending that maximizes prestige. In this section, I will first provide some

³⁰ This is the case for both Stanford financial reports and the Integrated Postsecondary Education Data System (IPEDS), a U.S. Department of Education database that includes financial data since 1987 for all universities that are eligible to enroll students with federal financial aid.

background on the rise of endowments as a source of prestige unto themselves (Conti-Brown 2011; Hansmann 1990) as well as a broad solution to spending needs for prestige competition. Then I explain how indirect tax arbitrage has served as a particular strategy for growing endowments.

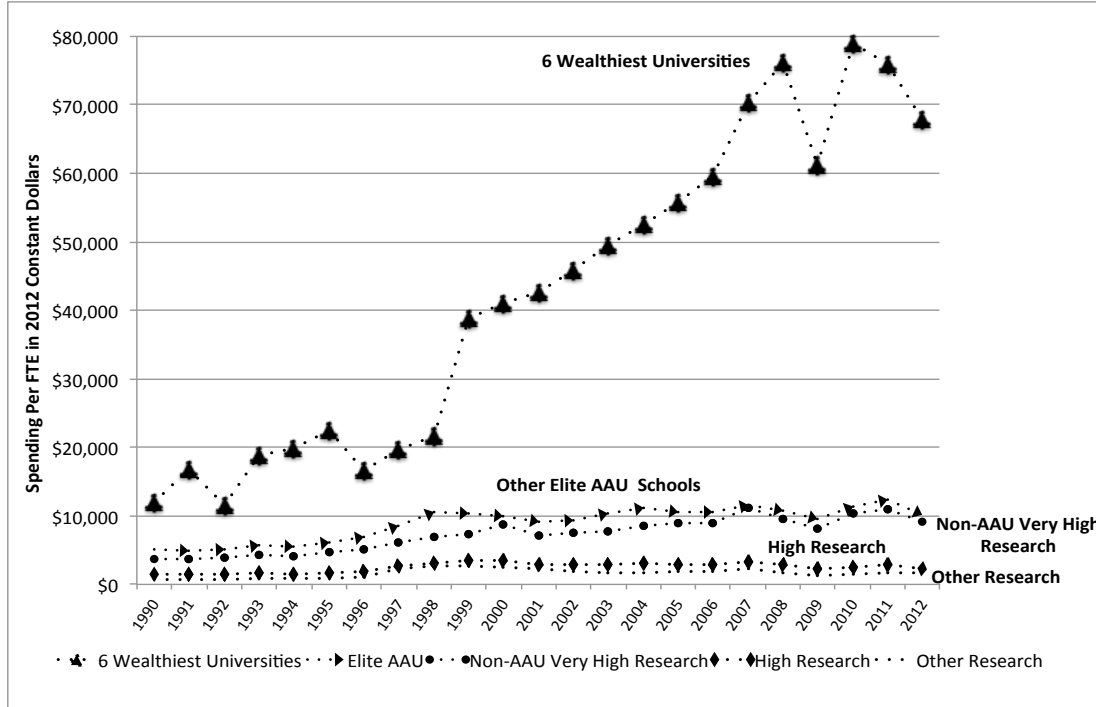
Endowments are a longstanding financial institution within elite universities. Prior to the early 1970s, however, university endowments and the legal framework of their tax exempt status were not intended to achieve substantial asset growth overtime through aggressive fundraising and diversified investments. Rather, the prevailing theory was that endowments were maintained to protect intergenerational equity by providing resources for comparable levels of effort towards the university's mission from one generation to the next (Tobin 1974, 427). In 1969, however, the Ford Foundation commissioned a report to address the problem of widespread depreciation of real endowment asset values in the 1950s and 1960s (Cary and Bright 1974). The report transformed endowment management, arguing that endowments should pursue a capital growth by diversifying their investments to include more stocks and bonds and by reinvesting capital gains to further grow the endowment. In the wake of the report, 47 states and the District of Columbia adopted the "Uniform Management of Institutional Funds Act" to clarify and codify their non-profit laws to allow for universities to pursue the endowment capital growth strategies recommended by the Ford report (Conti-Brown 2011, 718).

The adoption of the Ford-recommended endowment capital growth strategies, particularly by the wealthiest universities, contributed to a revolution in endowment funding for elite universities. In the decade prior to 1977, the average real annual rate of return was just 4.5 percent for endowments of at least \$50 million (National Association of College and University Business Officers 2013). Poorer endowments tended to do about the same. From 1980 to 2010, however, average real annual rate of return was 10.2 percent for Harvard, Princeton, and Yale and 8.8 percent for all endowments larger than \$1 billion in 2010 (Piketty 2014, 448). The author does not have comparable rate of return data for Stanford from 1980 to 1990. We do know, however that Stanford had an average annual real rate of return of 10.0 percent from 1990 to 2010, even in the wake of major losses in 2008. Among the Big 4 of Stanford, Harvard, Yale, and Princeton, only Yale had a higher average annual real rate of return of 10.7 percent from 1990 to 2010.

With higher rates of return from diversified capital investment strategies, total endowment asset values reported by NACUBO increased ten-fold in 2012 constant dollars from \$39.8 billion in 1977 to a high of \$456 billion in 2007. Although the use of endowments has diffused to less wealthy colleges, the growth in asset values has been concentrated disproportionately at the wealthiest institutions (Piketty 2014, 448). Among the nine undergraduate-enrolling private institutions that held more than one billion dollars in endowment assets in 1977, total endowment assets of more than quadrupled from \$17.2 billion in 1977 to \$77.8 billion in 2003, an average of 594 thousand dollars in assets per FTE student. Using more detailed data for years since 1990, we can see that endowment assets increasingly provided a huge source of resources for university activities at the most wealthy private research universities. Figure 1 shows that spending per FTE student on university activities increased around seven-fold at the six wealthiest research universities from just over \$10,000 in 1990 to \$70,000 or more since 2010. These endowment spending increases at the top dwarfed the also substantial increase in

per FTE student endowment spending from about \$5,000 to about \$10,000 at the 20 other private research universities that are members of the elite American Association of Universities (AAU) and the 9 non-AAU universities with “very high” research activity ratings from the Carnegie Classification system. Endowment growth was much less substantial in the private “high research” and “other research” categories. In addition, the nine wealthiest universities controlled 27 percent of all higher education endowment assets in 2012, but enrolled around one percent of FTE students attending public and private schools.

Figure 1: Private Research University Spending Per FTE Student From Endowments



Source: Author database of NACUBO and IPEDS data.

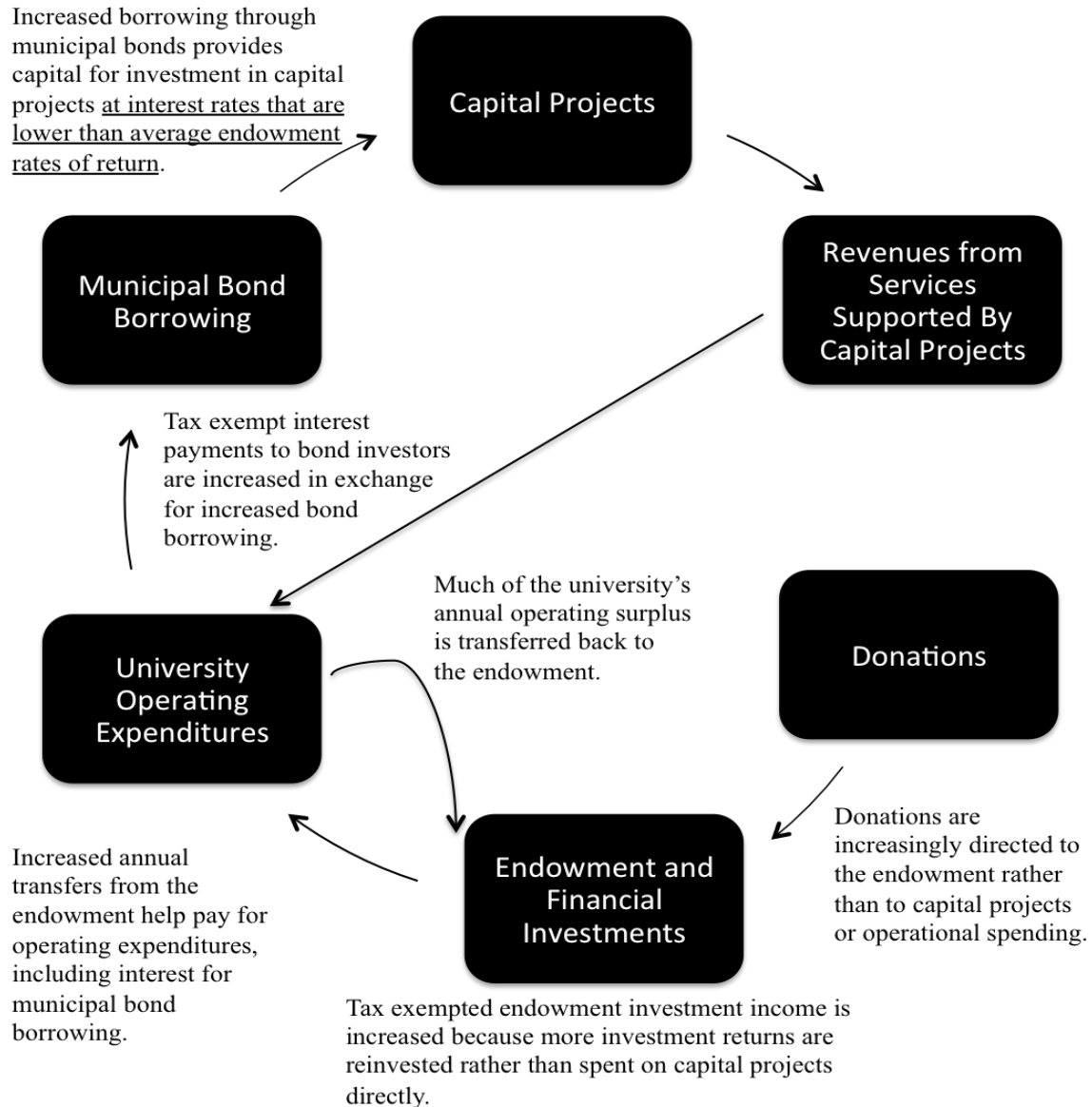
Financialization and Indirect Tax Arbitrage

Diversification into higher yield and higher risk investments, however, was only one facet of the multiple but interconnected forms of financialization that has driven up endowments at elite universities (Eaton et al. 2016). In addition, universities can boost endowment growth by directing donations to the endowment rather than operational spending or non-financial capital investments. Indirect tax arbitrage connects endowment investment with another growing use of financial transactions by universities – institutional borrowing. Having embraced the capital investment growth strategies put forward by the Ford Foundation, it makes sense that wealthy universities would have a cultural framework for increasing their use of other financial transactions to allocate resources.

Indirect tax arbitrage occurs when a university borrowing through tax-exempt municipal bonds and notes pay for capital projects instead of using its ample endowment wealth (Congressional Budget Office 2010). This process is illustrated in Figure 2. Universities choose to undertake such borrowing with municipal bonds and notes because

the interest rate for municipal bond borrowing tends to be lower than average annual rates of return on endowment assets. As a result, the university can make more money by investing endowment wealth than the university can save by spending endowment wealth in place of borrowing. Direct tax arbitrage, borrowing using municipal bonds to directly fund university investments, is prohibited by federal tax law because it would allow private investors to earn untaxed income on interest from lending through municipal bonds to finance an unlimited amount of university financial investments.

Figure 2: The Process of Indirect Tax Arbitrage



Indirect tax arbitrage by universities was not an issue as municipal bond borrowing was extended to support private universities. Prior to the mid 1970s, most universities still adhered to the intergenerational equity theory of preserving, rather than growing endowment assets. In addition, private universities used Department of

Education bond borrowing under the 1962 Higher Education Facilities Act. As the Department of Education bond program wound down, states set up financial authorities in the late 1960s and early 1970s to borrow money through municipal bonds on behalf of private, non-profit universities. Private universities incur all of the liability and the costs under this municipal bond borrowing arrangement. Municipal bond borrowing, however, comes at a public cost because income earned from interest on municipal bonds was left tax exempt under the establishment of federal income taxes because of doubts about the constitutionality of taxing such income (Johnson 2007, 1260). It has since been determined that there is no constitutional problem with taxing income from interest on municipal bonds (Joint Committee on Taxation 2008, 16). The tax exemption, however, has been left unchanged, in part because it is thought that investors tend to lend money at lower interest rates through municipal bonds than through taxable bonds. The logic is that investors accept these lower interest rates as they can keep all of the income earned from interest paid on municipal bonds and pay no state or federal taxes on the income (Congressional Budget Office 2010, 2).

The tax exemption for income on interest from municipal bonds, however, primarily benefits wealthy private and corporate investors. This is first because all investment income is already tax exempt for pension funds and other non-profit investment funds. As such, pension and non-profit investment funds tend to invest their assets in other investment assets that pay higher rates of return. Poignantly, university endowments *never* invest in municipal bonds. Suspicions about the skewed benefits of indirect tax arbitrage prompted an investigation and report in 2010 by the Congressional Budget Office (CBO). According to the 2010 report, the Joint Committee on Taxation (JCT) estimated that the total federal tax expenditure for higher education municipal bond debt was \$5.5 billion for that year alone (Congressional Budget Office 2010, 2). The JCT estimated separately that 28 percent of the tax expenditure for indirect tax arbitrage went to tax exemption of income for corporate investors while 72 percent of the tax expenditure went to tax exempted income for individual investors (Joint Committee on Taxation 2008, 53).

Economists have also argued that the social benefits of the tax exemption are limited because wealthy investors do not actually lend to municipal bond borrowers at significantly lower rates. If private investors in the 35 percent tax bracket passed on all of their savings from the income tax exemption by offering lower interest rates to municipal bond borrowers, the interest rate offered would be 35 percent lower. In fact, interest rates tend to be on average just 2 to 8 percent lower than a borrower could pay in interest on taxable debt (Johnson 2007, 1260).

Finally, the CBO report argues that tax exempted borrowing for higher education goes overwhelmingly to very wealthy institutions for capital investments of questionable social benefit (Congressional Budget Office 2010, 5–6). Almost 75 percent of tax exempt bond debt was held by wealthiest 4 percent of a representative sample of 931 schools examined by the CBO. At the same time, the wealthiest 4 percent of schools all had investment assets valued at far in excess of the equivalent of a year's worth of spending. A separate study has found that the largest share of university borrowing in the last 10 years has been for amenities (Eaton et al. 2016). This is consistent with the prestige competition notion that resources will be allocated towards prestige maximizing investments.

The tax expenditure on higher education municipal bond debt comes on top of two other tax expenditures that can boost endowment growth. First, the JCT estimated a federal tax expenditure of \$4.6 billion from tax deductions for donations to universities in 2010. If a university increasingly directs donations to its endowment, this tax expenditure will increasingly go towards can boosting endowment growth. Second, if there is a continuation of the average annual real rate of return of U.S. endowments from the last 30 years, endowments returns will tend to increase from an average level of \$36.9 billion a year. Because of the exemption for non-profits from the 35 percent federal capital gains income tax, these endowment earnings come at the cost of another \$12.9 billion tax expenditure.

Economists argue that the actual revenue loss to the federal government from these exemptions because donations, borrowing, and endowment investment might be curtailed by the application of taxes (Poterba and Verdugo 2008). Still, if only 20 percent of donations to universities go towards endowments, the annual triple tax expenditure for endowments by the federal government alone amounts to more than \$19 billion annually. This does not even account for parallel tax expenditures by state and local governments.

Aside from wealthy universities, the primary beneficiaries of these tax expenditures are municipal bond investors and donors who themselves tend to wealthy. By also recalling that students at wealthy universities themselves tend to come from wealthy backgrounds (Karabel 2005; Stevens 2009), we can now reimagine wealthy universities as a sort of tax haven. Indeed, the children of wealthy donors are much more likely than low-income students to benefit from the donation directly by attending the college upon which the donation is bestowed. The donors can thereby reduce their tax liability for the education of others by contributing financially to the education of their own. If that wealthy donor so chose, she could even park her wealth in municipal bonds for the very same university in exchange for tax-free interest income. And through indirect tax arbitrage, the university could then preserve its in endowment assets for even more lucrative investments.

Having reviewed these theories of financialization and indirect tax arbitrage, we should now expect that Stanford has used indirect tax arbitrage when possible. Under this pronounced shift to a financial logic, we should also expect that the use of indirect tax arbitrage coincided with broader moves to allocate resources through financial transactions. This could include the funneling of donations and annual operating margins into the endowment where those assets can earn greater financial returns. Consistent with ideas of prestige competition, we should also expect that Stanford tended to use arbitrated municipal bond debt for investments in amenities. Likewise, we should expect that Stanford used endowment investment returns to maximize prestige boosting annual expenditures on faculty and instruction, but without broadening access or reducing selectivity.

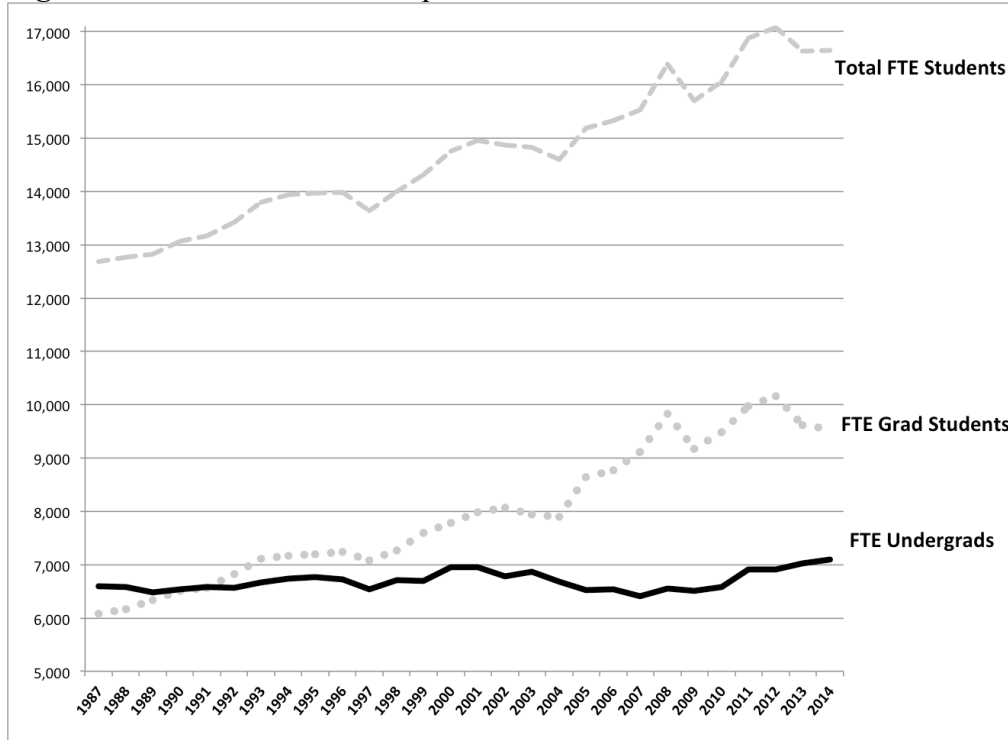
Finally, legal scholars have argued that elite universities use the growth of endowment asset values unto itself to maximize prestige (Conti-Brown 2011; Hansmann 1990). If this were the case, we would expect the Stanford to include a discussion of endowment success in comparison to peers in financial reports. We might also expect the Stanford to reinvest endowment assets even when it had extraordinary financial pressures such as after the 2008 financial crisis. Indeed, as we will see, the university reduced spending after the crisis rather than further deplete endowment assets. In addition,

Stanford engaged in a \$1 billion direct taxable arbitrage by borrowing with taxable bonds rather than spend down endowment assets.

The Case of Stanford University

I turned to two main sources of data in order to assess how Stanford fits with my synthesis of theories regarding university prestige competition and financialization. First, I use data on finances, enrollments, and degrees awarded that Stanford reported to the Department of Education for its Integrated Postsecondary Education Data System (IPEDS). IPEDS, however, lacks more granular data on municipal bond borrowing, endowment investments, and revenue. For this, I digitized Stanford’s financial reports from 1998 to 2014 and converted them to machine-readable formats for analysis. All amounts are provided in 2014 constant dollars to account for inflation. Stanford medical center finances, which are reported separately, are excluded from my analysis.³¹

Figure 3: Stanford Full Time Equivalent Enrollment



Source: IPEDS

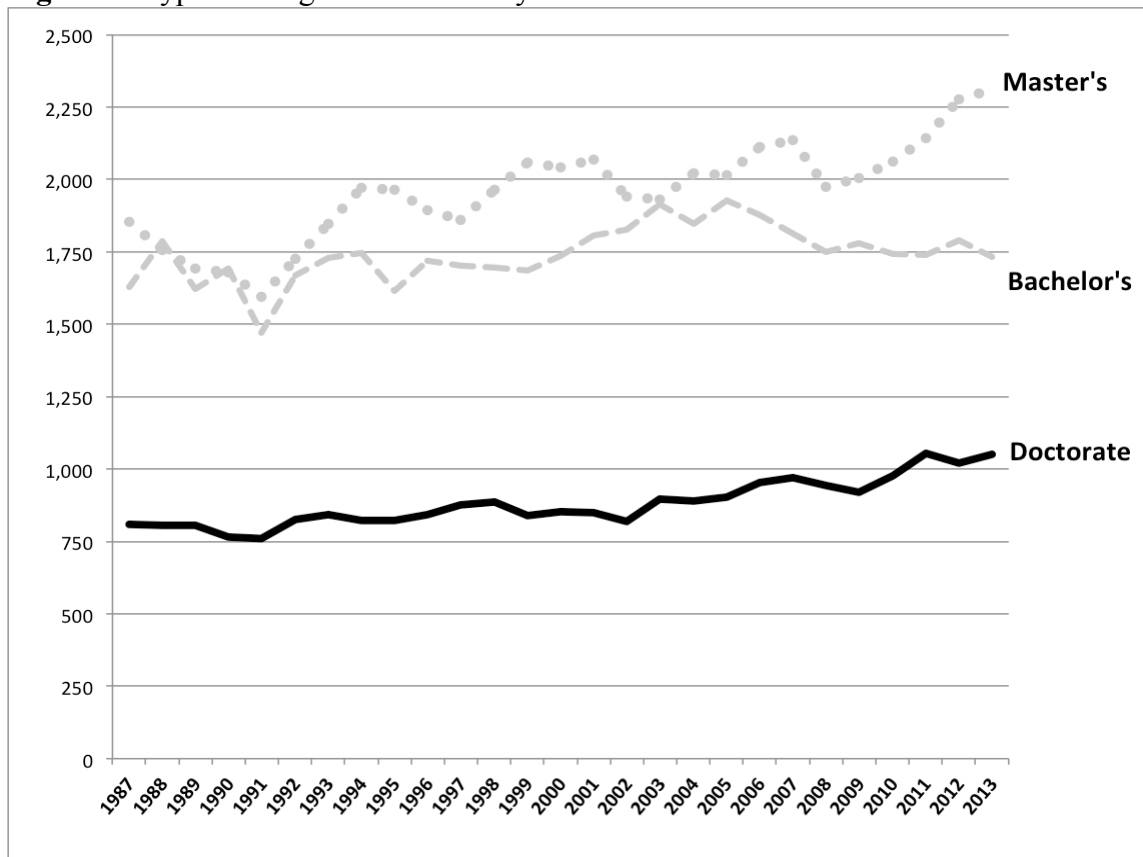
The first evidence of prestige competition at Stanford is its flat level of undergraduate enrollment since 1987 despite massive increases in spending and graduate enrollment. We can see this first in Figure 3 which shows Stanford’s enrolment of full

³¹ I exclude hospital finances because university hospital finances are shaped by an additional set of factors including medical inflation, medical service prices, and internal cross subsidies of hospital charity care. In addition, Stanford’s medical centers have a separate and much smaller endowment. This is consistent with the CBO’s findings that indirect tax arbitrage is much less prevalent in the hospital sector because most non-profit hospitals lack sufficient endowment assets for potential use towards capital projects (2010). I discuss this contrast further in the conclusion.

time equivalent undergraduate and graduate students. FTE enrollment of graduate student increased 57 percent from 6,075 in fall of the 1987 academic year to 9,547 for 2014. FTE enrollment of undergraduates was held comparatively flat between 6,592 7,096 with the number of new freshmen enrolled every year held at close to 1,600 annually.

Figure 4 shows that graduate student enrollment growth contributed to increases in both master’s degree awards and doctorate degree awards. By holding undergraduate enrollment flat despite increasing capacity, Stanford increased its measures for undergraduate selectivity. Undergraduate selectivity measures in turn are central in U.S. college rankings and prestige competition.

Figure 4: Types of Degrees Awarded by Stanford



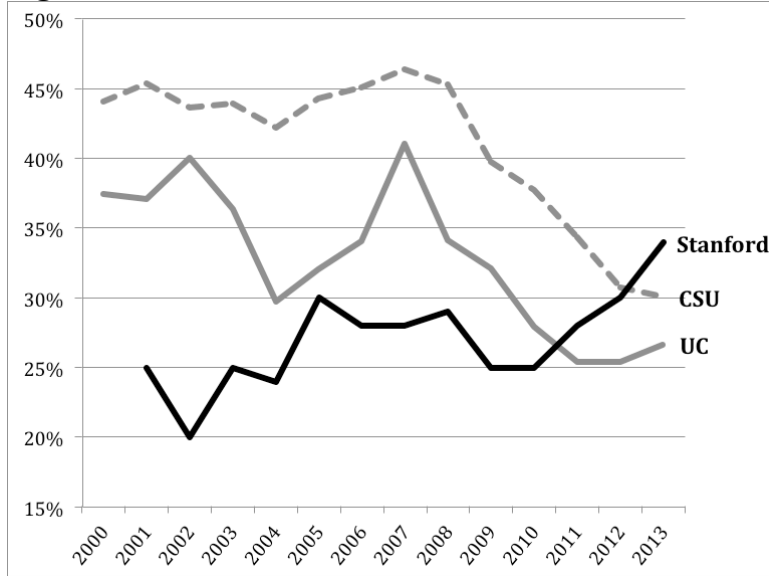
Source: IPEDS

While Stanford held undergraduate enrollment flat, the students that have matriculated since 2000 have on average come from increasing wealth. Tuition, room, and board costs increased 26 percent from \$44,664 in 2001 to \$56,411. Yet Figure 5 shows that the percentage of freshmen that were wealthy enough to attend Stanford without any financial aid or personal student loans increased from 25 percent to 34 percent during the same period.³² In contrast, there was a large fall during the same

³² The parents of these students, however, may have taken out educational loans. There are no published measures of the percentage of parents who borrow by institution or financial aid eligibility.

period in the percentage of freshmen attending much cheaper UC and CSU campuses without comparable financial aid.

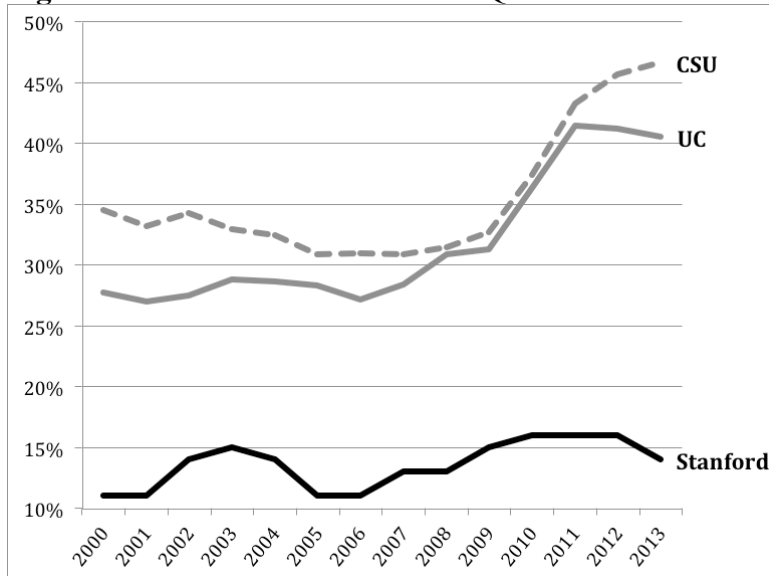
Figure 5: Share of Students with No Financial Aid



Source: IPEDS

Similarly, Figure 6 shows that the percentage of freshmen with low enough incomes to receive Pell Grants increased from just 11 percent to just 14 percent during the same period even though income eligibility for Pell Grants expanded. In contrast, the percentage of freshmen receiving Pell Grants grew to 41 percent at CSU campuses and 47 percent at UC campuses.

Figure 6: Percent of Freshmen Who Qualified for Pell Grants

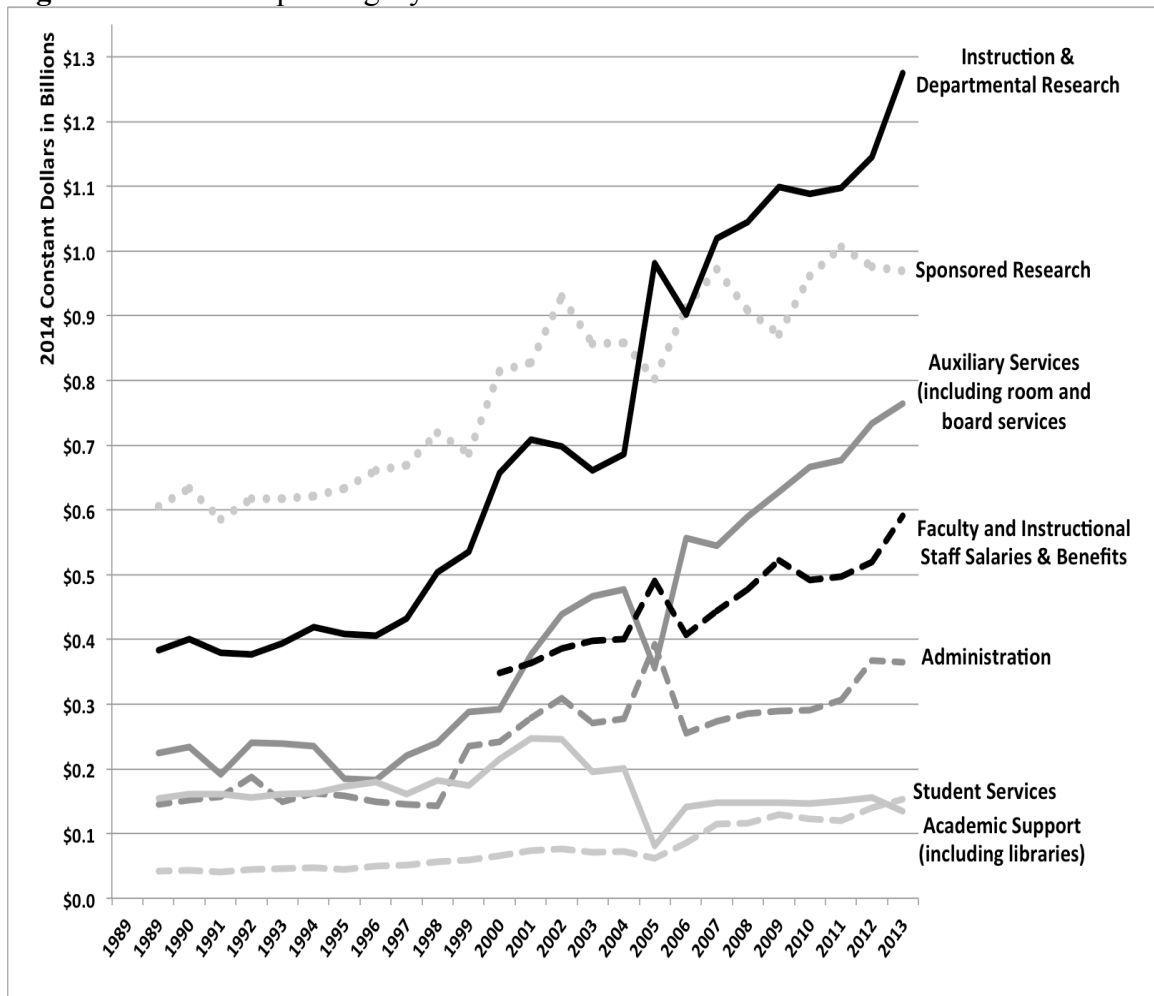


Source: IPEDS

Spending and Prestige Competition at Stanford

With undergraduate enrollment flat, it is clear that broader undergraduate education did not prompt spending increases. By disaggregating Stanford’s spending by purpose, however, we can see two indicators of how prestige competition contributes to rapidly rising costs. Figure 7 shows that Stanford radically increased spending on auxiliary services, a reporting category that includes fee based research parks as well as amenities such as dormitories, dining halls, recreational services, and collegiate sports. Spending in this category increased an astounding 219 percent from \$240 million in 1998 to \$765 million in 2013. We do not know the exact portion of this spending increase that went to amenities and sports, both of which have been linked to university prestige competition (Armstrong and Hamilton 2013; Jacob, McCall, and Stange 2013; Lifschitz, Sauder, and Stevens 2014; Stevens 2009). It is safe to say, however, that amenities spending increased substantially considering that the price of room and board per student increased from \$11,045 in 2001 to \$13,631 in 2014.

Figure 7: Stanford Spending By Area



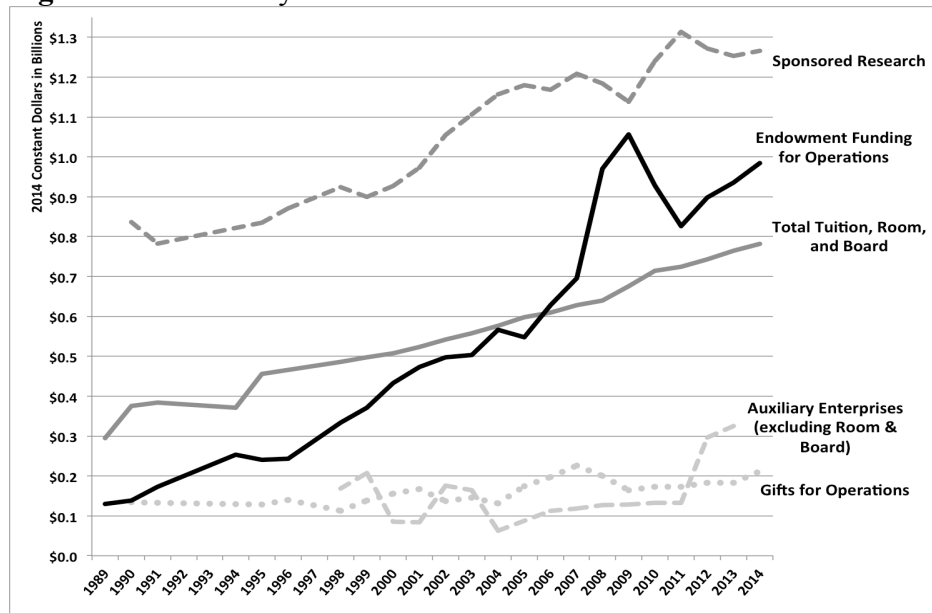
Source: IPEDS

Second, Figure 7 also shows a radical increase in spending on instruction, academic departments, and faculty, particularly since 1997. Since 1997, Stanford increased spending by 195 percent from \$432 million in 1997 to \$1.3 billion in 2013 just for instruction, a category that includes faculty base salaries and benefits and most funding for academic departments. This amounted to an increase in annual instructional spending per student from almost \$32 thousand to just under \$77 thousand per student. In comparison, neighboring San Jose State University spent just under \$16 thousand per student to fund all university activities, not just instruction. The size of the spending increase at Stanford is perplexing because spending on faculty and instructional salaries and benefits has increased by a considerable but much smaller 70 percent from \$348 million in 2000 to \$591 million in 2013. Nevertheless, it is clear that a substantial amount of money went to spending on recruitment and retention of faculty and the limitation of teaching loads. Such faculty spending strategies are central to prestige competition (Winston 1999). Where the rest of Stanford's spending on instruction goes is itself a question for further research.

Financial Investment Revenue and the Funding of Prestige Competition

As expected, financial investment revenue provided critical resources for prestige competition at Stanford. Figure 8 shows Stanford's growth of revenue by source from 1989 to 2014. Revenue from gifts for operations and auxiliary enterprises (excluding room and board), were relatively flat, though auxiliary enterprise revenue has risen steeply since 2011 as Stanford's research parks have come online. Revenue from sponsored research and from tuition, room, and board both grew radically. Annual tuition, room, and board revenue increased 166 percent from \$295 million to \$793 million. Annual revenue from sponsored research increased from \$837 million to \$1.3 billion. No other area of revenue growth, however, can compare with revenue growth from Stanford's financial investments.

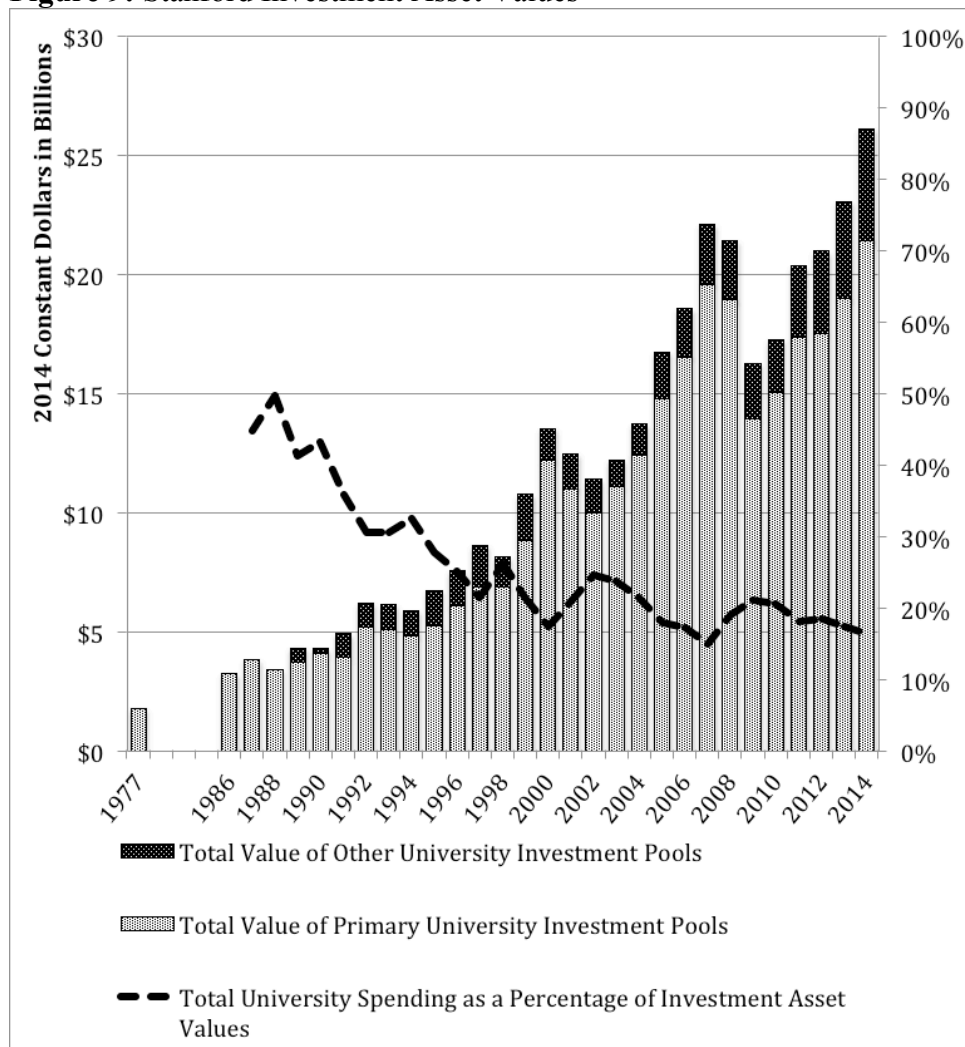
Figure 8: Revenue by Source



Source: Stanford University Financial Reports

Growth in revenue from the Stanford's financial investments and endowment was in a league of its own. Stanford used the endowment to fund operations by transferring approximately 5 percent of endowment assets annually for spending on university operations. Figure 9 shows that the value of Stanford's endowment assets grew by 130 percent from \$1.8 billion in 1977 to \$4.1 billion in 1990. Since 1990, Stanford has reported the annual value of all of its financial investment assets. Since 1990, Stanford's total financial investments increased another 6 fold in value from \$4.3 billion to \$26.1 billion in 2014. The black dashed line in Figure 9 shows that while Stanford's total annual spending increased rapidly, it actually fell as a share of total financial asset values from 50 percent in 1988 to 16 percent in 2014. In other words, Stanford's financial assets could cover all of Stanford's spending at its 2014 level for more than 6 years. Accordingly, allocations from Stanford's financial assets for operational spending increased by 662 percent from \$129 million in 1989 to \$985 million in 2014.

Figure 9: Stanford Investment Asset Values



Source: Stanford Financial Reports, IPEDS, published NACUBO Historical Market Value Tables.

Of Stanford's different revenue sources, financial investment income had the most exclusive link to spending on prestige competition. Of the major areas of spending shown in Figure 8, sponsored research and auxiliary services are essentially self supported by sponsored research and auxiliary services revenue. While sponsored research contributes to a university's prestige, it also contributes to a university's core function of knowledge creation (Stevens, Armstrong, and Arum 2008). Meanwhile, spending on auxiliary services can include prestige-boosting spending on amenities. Auxiliary service spending, however, also includes spending on private research parks whose contribution to prestige is more tenuous. Similarly, spending on financial aid is entirely supported by tuition revenue, and tuition revenue also goes toward supporting baseline instructional costs and faculty. With these major areas of spending covered by other revenue sources, financial investment revenue is allocated primarily to instruction and departmental spending, on top of revenue from tuition. This massive surplus of resources could thus be spent to dramatically increase spending on faculty compensation, recruitment, and retention as well as other unidentifiable academic department expenses.

Financial Investments as a Source of Prestige

Stanford also conformed to the thesis that elite universities use endowment performance itself in prestige competition. The Stanford Management Company, which governs Stanford's endowment, and the Stanford Office of University Communications issued annual press releases to celebrate strong returns or to justify years of poor investment performance. For example, the September 24th 2014 release read, "Over the past 10 years, the Stanford MP has achieved an annualized return of 9.9 percent. During the same period, the U.S. equity market, as measured by the S&P 500 Total Return Index, increased by an average of 7.8 percent per year" ("Stanford Management Company Releases 2014 Results" 2014). In March of 2015, another press release celebrated that Stanford had recruited Robert Wallace, a former Yale endowment manager, to head Stanford's endowment ("Robert Wallace Named to Lead Stanford Management Company" 2015). The release also noted that Wallace sat on the investment committee of Cambridge University.

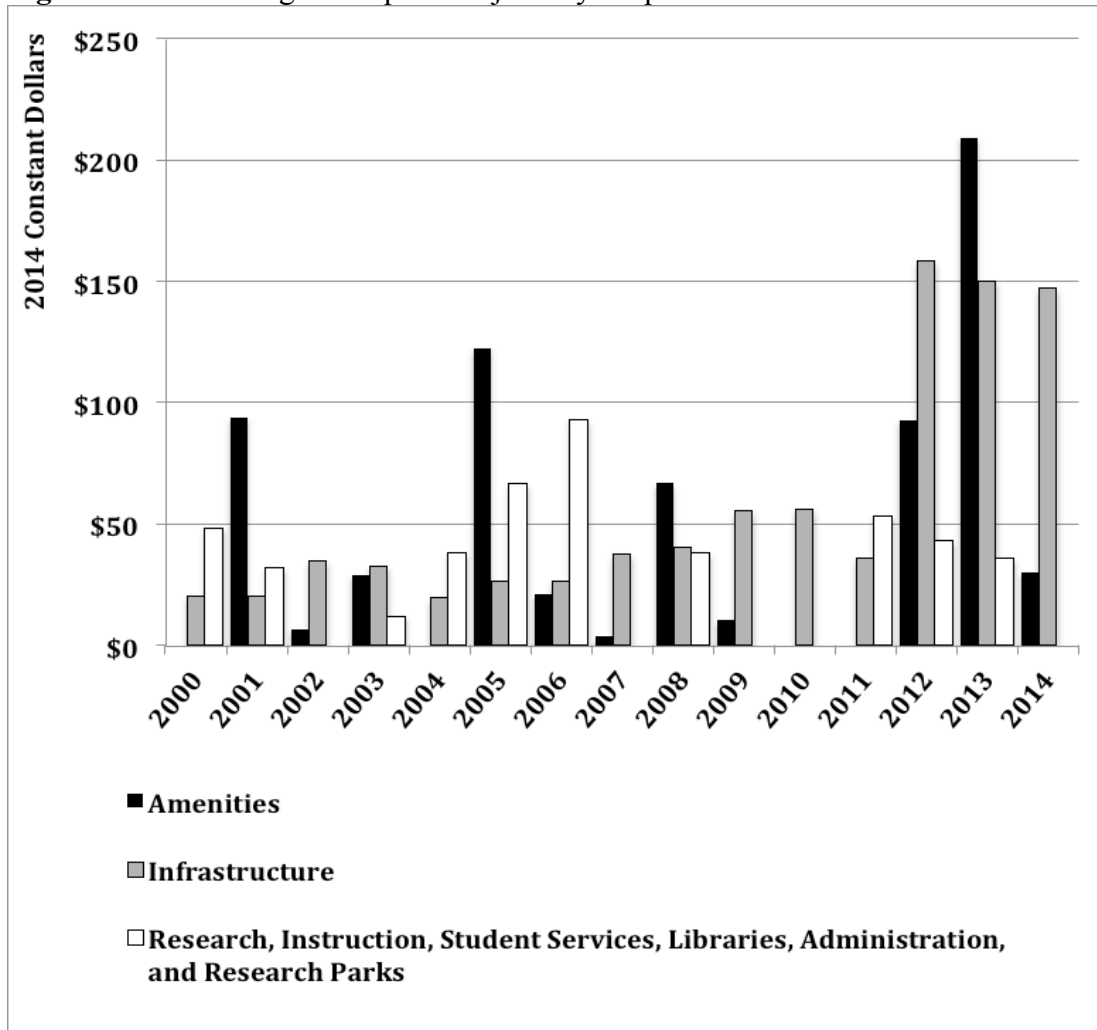
While Stanford's communications efforts around the endowment demonstrate a form a prestige competition, it is beyond the scope of this study to assess the extent to which such prestige competition may or may not play a causal factor in universities efforts to grow their endowments (Conti-Brown 2011; Hansmann 1990).

Institutional Borrowing and Amenities Investments

By decomposing Stanford's institutional borrowing, we can also see that Stanford increasingly used financial debt transactions to fund capital projects, especially for amenities linked to prestige maximization. Stanford financial reports show that Stanford's outstanding debt increased from just \$680 million in 1989 to \$3.3 billion in 2014. Most of that increase took place from 1998 onward. Broader research using data from IPEDS has shown that the largest use of university borrowing is for investments in amenities-related capital projects. Data published in the annual Stanford University Capital Plans and Budgets shows that Stanford matches the national trend. Figure 10

breaks down borrowing by year and purpose for capital investments since 2000.³³ While borrowing by purpose varied year-to-year, borrowing for amenities tended to outpace borrowing for all other purposes except infrastructure. As such, it also became more likely that general infrastructure investments would support amenities as well.

Figure 10: Borrowing for Capital Projects by Purpose



Source: Stanford University Capital Plans and Budgets.

Table 1 provides details for all non-infrastructure capital projects for which Stanford has borrowed since 2000. Stanford borrowed \$685.6 million for amenities during this period. The largest area of amenities borrowing was for amenities for graduate students. In comparison, Stanford borrowed \$284.5 million for capital projects related to non-medical research, instruction and student services. Stanford borrowed \$106.3 million for medical research, instruction, and student services. Less than \$50 million was borrowed for capital projects for each of the categories of administration, research parks, and libraries. We again see a growing link between financialization and

³³ It is difficult to compare capital project borrowing by purpose before 2000 because of more limited reporting in Stanford’s Capital Plans and Budgets prior to that year.

prestige competition in the increasing use of financial borrowing transactions and spending to project a prestigious campus image. The \$166.7 million in borrowing for undergraduate amenities is especially telling because Stanford did not increase undergraduate enrollment at all during this period.

Table 1: Capital Projects Borrowing by Project Type (excluding infrastructure projects)

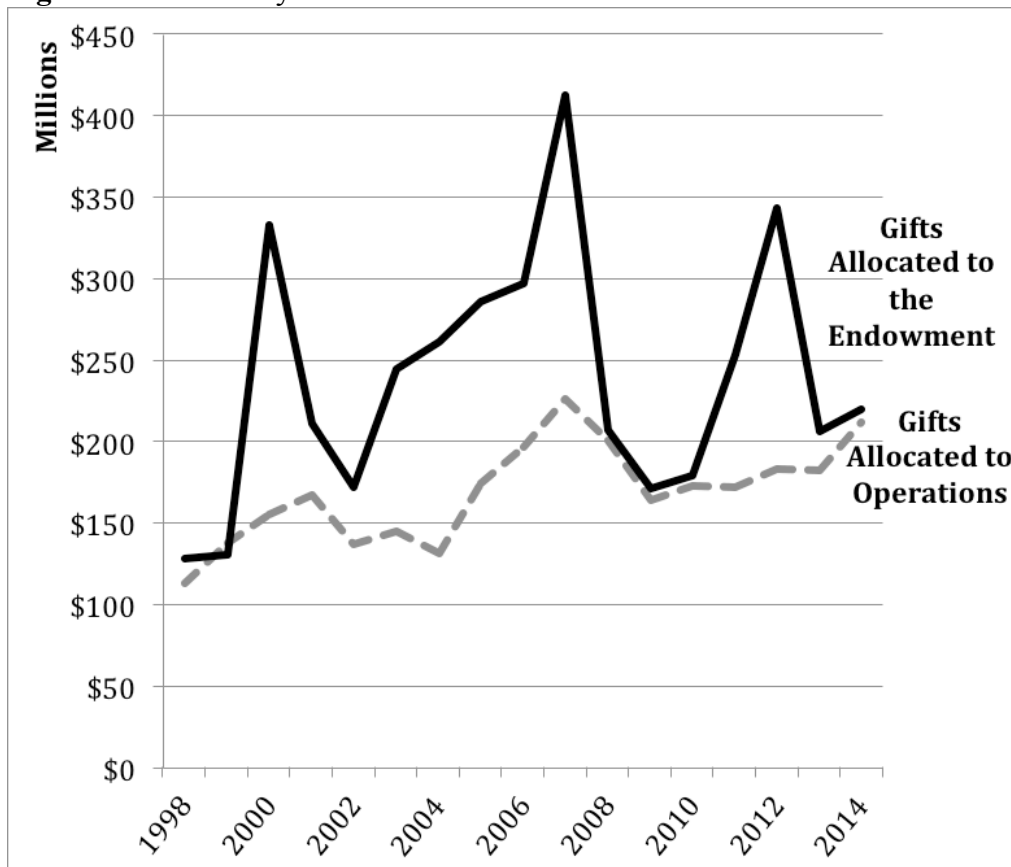
Year Started	Project	Amount Borrowed (in millions*)
Undergraduate Amenities		
2013	Lagunita Undergrad Housing	\$28.3
2013	Manzanita Undergrad Housing	\$19.3
2013	Forsythe Data Center Upgrade	\$4.3
2009	Arrillaga Family Dining Commons / East Campus Dining Commons	\$10.2
2008	Crother Hall Renovation	\$24.2
2006	Roble Hall Renovation7	\$21.2
2002	Branner Kitchen and Dining (CIP)	\$6.6
2001	Branner Hall Renovations (CIP)	\$20.3
2001	Mirrielees Seismic Phases I & II (150 beds)	\$19.3
2001	Wilbur Kitchen Renovation (CIP Year 9)	\$13.2
		Subtotal:
		\$166.7
Graduate Amenities		
2014	Stanford GSB Graduate Residences	\$30.0
2012	Comstock Graduate Housing	\$92.8
2005	Munger Graduate Residences	\$97.0
2003	Law Student Housing (600 units) and common space	\$27.8
2003	Graduate Student Community Center	\$1.3
2001	Escondido Village Studios 5 & 6 (326 new beds)	\$26.7
		Subtotal:
		\$275.6
General Amenities		
2008	Maples Parking Structure	\$42.5
2007	Visitor Information Center/Track Bleachers Expansion	\$3.4
2005	Old Union Complex Renovation	\$25.5
		Subtotal:
		\$71.3
Faculty Amenities		
2013	California Avenue Faculty Homes	\$157.5
2001	SLAC User Lodging Facility	\$14.4
		Subtotal:
		\$172.0
Non Medical Research, Instruction, and Student Services		
2013	Science Teaching and Learning Center	\$4.4
2011	Stanford Research Computing Facility	\$32.5
2008	William H. Neukom Law Faculty Office Building	\$22.0
2006	Knight Management Center and Parking Structure	\$64.6
2005	Bioengineering / Chemical Engineering Base Building	\$36.1
2005	Center for Nanoscale Science and Technology	\$30.3
2004	Astrophysics Building (formerly Varian 2)	\$30.5
2003	Kavli Institute for Particle Astrophysics & Cosmology	\$2.8
2003	Knoll Seismic Renovation	\$1.7
2003	Building 500/510 Archaeology	\$7.5
2001	Career Development Center and the Disability Resource Center	\$10.7
2000	James H. Clark Center & Campus Drive Crossings	\$2.2
2000	Building 160 Seismic & Program Renovation	\$33.7
2000	Student Health Service Building	\$5.5
		Subtotal:
		\$284.5
Medical Research, Instruction, and Student Services		
2013	RAF 1 & 2	\$15.2
2013	Stone Complex	\$16.3
2012	CJ Huang Building	\$9.7
2011	Satelite Research Animal Facility	\$20.9
2008	Lorry I. Lokey Stem Cell Research Building	\$10.5
2008	Stanford Institutes of Medicine #1	\$5.5
2006	Li Ka Shing Center for Learning and Knowledge	\$21.2
2006	1050 Arastradero	\$7.1
		Subtotal:
		\$106.3
Administration		
2013	408 Panama Mall Office Building	\$30.8
2004	Bakewell Seismic Renovation	\$7.5
2000	Building 170 Seismic & Systems Upgrade	\$6.9
		Subtotal:
		\$45.2
Research Parks		
2012	3155 & 3165 Poorter Drive Lab Renovations	\$33.5
		Subtotal:
		\$33.5
Libraries		
2001	Offsite Library Collections (SAL III)	\$21.0
		Subtotal:
		\$21.0

Source: Stanford University Capital Plans and Budgets. *Amounts are in 2014 constant dollars.

4. Indirect Tax Arbitrage at Stanford

We have just seen how financial transactions played a critical role in prestige competition by Stanford. Now we can assess the extent to which Stanford used indirect tax arbitrage as a strategy to boost prestige both through financing for capital project investments and through the growth of financial investment assets. The Congressional Budget Office's measures of indirect tax arbitrage look simply at the extent to which tax-exempt debt was used for capital projects in place of the expenditure of endowment assets. I take a broader view of indirect tax arbitrage by also examining the extent to which tax exempt donations and operating margins were transferred to the endowment.

Figure 11: University Gifts and the Endowment



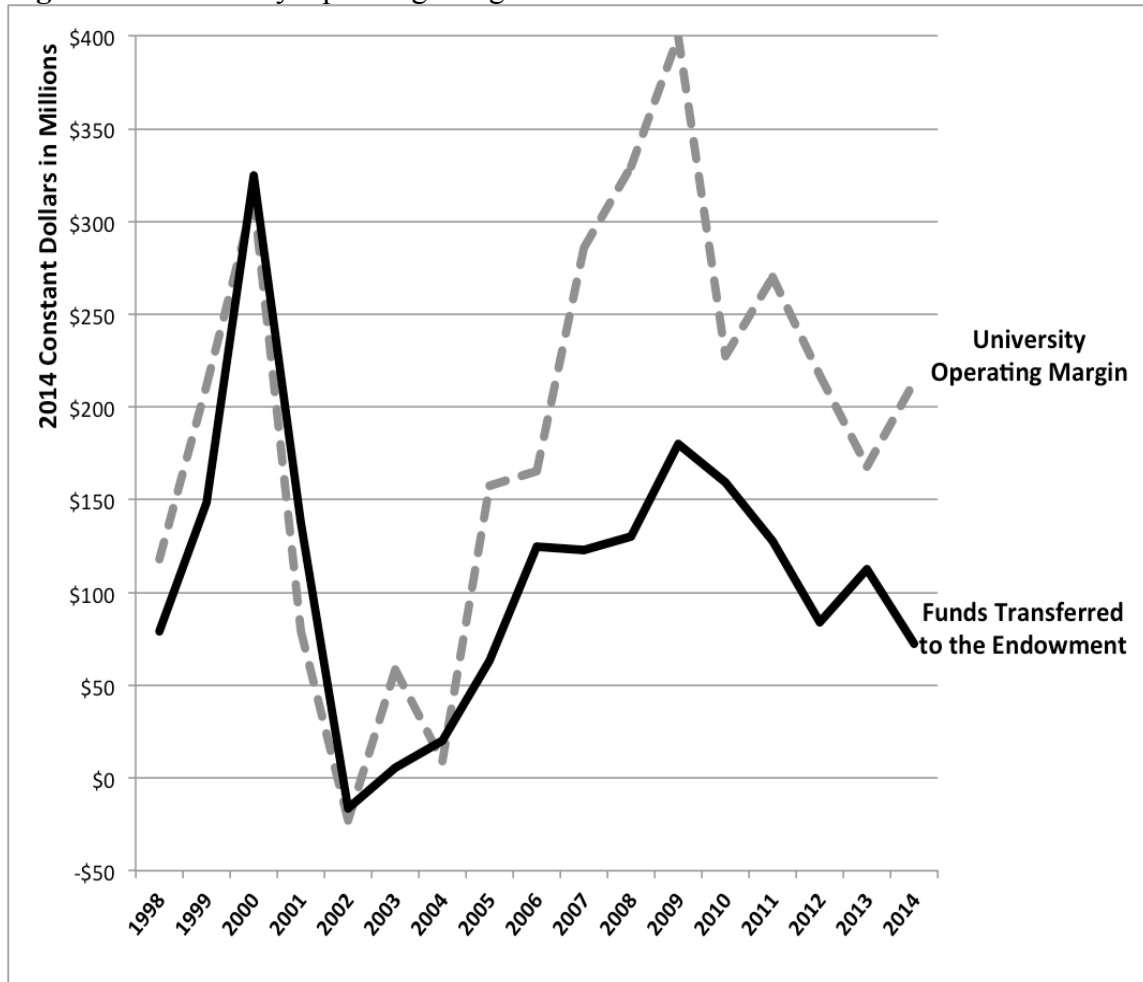
Source: Stanford University Financial Reports

First, Figure 11 shows how since 1998, Stanford tended to direct more donations to the endowment than to operational spending. Stanford tended to increase the ratio at which donations were directed to the endowment in years of economic growth. This disparity reached a highpoint in 2007 when Stanford directed \$413 million in donations to the endowment but just \$227 million in donations went to operational expenditures. In doing so, Stanford used tax deductible donation revenue to boost tax exempt endowment investment returns by enlarging the size of Stanford's investment portfolio. When economic downturns placed downward pressure on other university revenue streams,

Stanford tended to direct more equal levels of donations to the endowment and to operations.

Similarly, Figure 12 shows that Stanford’s internal transfers to its endowment tended to track the size of Stanford’s annual operating margin (the operating margin is an annual surplus or deficit for a non-profit organization that is analogous to an annual profit margin). From 1998 to 2004, Stanford transferred operating funds annually to the endowment in amounts essentially equal to the size of the university’s operating margin for that year. As such, transfers to the endowment ranged from a high of \$325 million in 2000 to a low of negative \$16 million in 2002. In the years since 2004, Stanford transfer operating funds to endowment in amounts ranging from 34 percent to 75 percent of the given year’s operating surplus. These transfers continued to rise and fall, however, in amounts parallel to fluctuations of Stanford’s operating margins. On average, Stanford transferred \$118 million to the endowment annually since 2004.

Figure 12: University Operating Margins and Internal Transfers to the Endowment

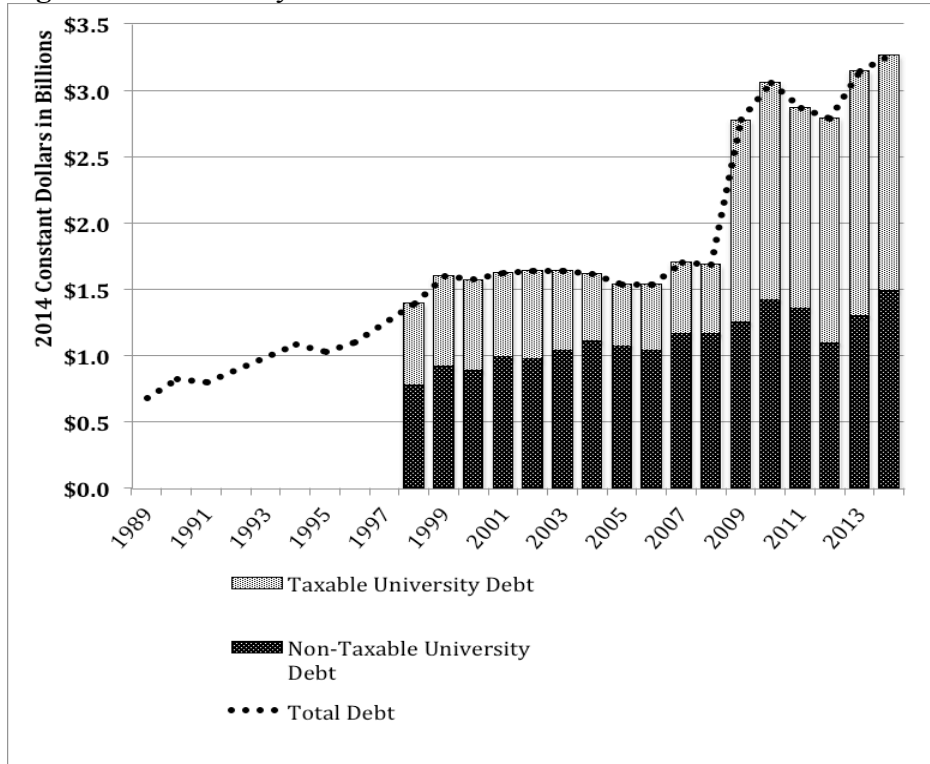


Source: Stanford University Financial Reports

Consistent with the CBO’s definition of indirect tax arbitrage, Stanford actually increased its borrowing for capital projects significantly parallel to the large growth of Stanford’s investment assets. Figure 13 shows the growth of Stanford’s total debt from

\$680 million in 1989 \$3.3 billion in 2014. In the years since 1998, debt is broken down between non-taxable and taxable debt.

Figure 13: University Debt



Source: Stanford University Financial Reports

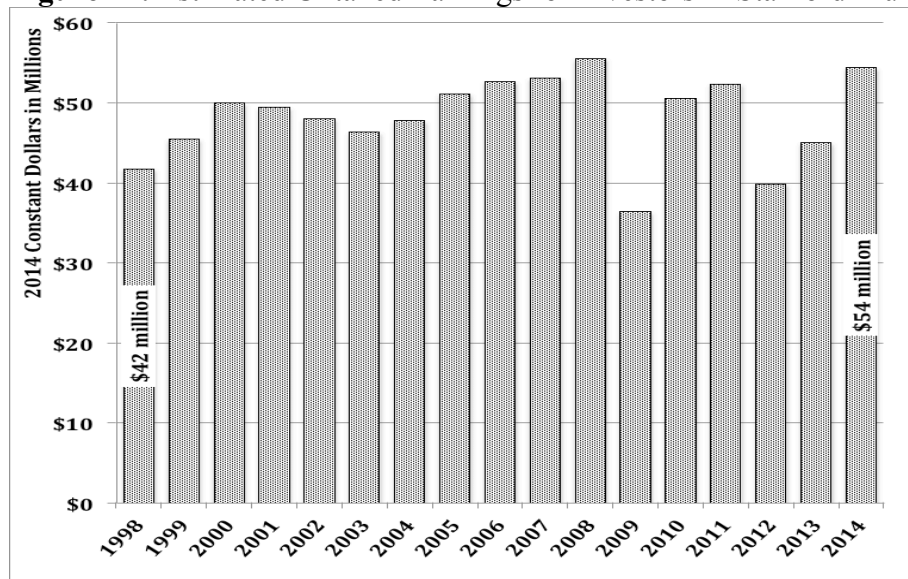
A closer examination of the relationship between Stanford’s debt and Stanford’s financial investments will help to explain concretely how indirect tax arbitrage works. Since 1998, the value of Stanford’s endowment assets has increased from \$8.2 billion to \$26.1 billion. During this same period, Stanford’s total debt increased from \$1.4 billion to \$3.3 billion. In other words, Stanford could at any time have paid off its entire debt and funded its annual capital project investments with just a fraction of Stanford’s investment assets. Instead, Stanford opted to borrow primarily with tax-exempt debt to finance capital projects investments. To enable tax exempt borrowing by Stanford and other private universities, the State of California established the California Educational Facilities Authority (CHEFA) in 1973. In exchange for a small fee, CHEFA issues tax-exempt municipal bonds and medium term notes on behalf of accredited non-profit colleges. Stanford in turn assumes all liability for its borrowing through CHEFA bonds. Because income from interest for CHEFA debt is tax exempt for corporate and individual investors, CHEFA bond investors tend to lend at lower interest rates than investors in the taxable bond market. Accordingly, Stanford doubled its outstanding debt through tax-exempt CHEFA municipal bonds from \$780 million in 1998 to \$1.5 billion in 2014. Stanford opted for this borrowing because its effective interest rate for CHEFA bond debt ranged from 3 to 6 percent while Stanford’s average annual rate of return on endowment assets has been over 10 percent since the 1980s.

The Congressional Budget Office first considers all of Stanford’s CHEFA debt to be indirect tax arbitrage because Stanford could have used endowment assets in place of CHEFA borrowing while still maintaining an endowment equivalent to several years of financial reserves. The near tripling in Stanford’s taxable debt since 1998, however, shows another dimension of Stanford’s indirect tax arbitrage strategy. First, the increase in taxable debt from \$617 million in 1998 to \$1.8 billion in 2014 shows that Stanford can easily access affordable credit from taxable bond markets. As such, Stanford has no special need for access to tax-exempt municipal bond borrowing. Second, Stanford’s issuance of \$1 billion in 2009 Series taxable bonds reveals that Stanford’s bond borrowing is part of a deliberate arbitrage strategy. The 2009 Series was issued amid revenue shortfalls during the aftermath of the 2008 financial crisis. Rather than mitigate spending cuts by dipping further into endowment assets, Stanford borrowed \$1 billion in Series 2009 bonds to maintain university operational spending as well as the financial position of Stanford’s investment portfolio. Even amid the worst financial crisis since the Great Depression, Stanford was able to carry out this unprecedented level of borrowing, belying the notion that Stanford has any economic need for access to municipal bond markets to finance its capital projects.

5. Estimating Tax Expenditures for Indirect Tax Arbitrage at Stanford

Figure 14 shows the estimated annual cost of federal tax expenditures for Stanford’s use of municipal bonds for indirect tax arbitrage. This estimate is calculated simply by dividing Stanford’s reported annual spending on interest by the share of Stanford debt that is tax-exempt. This estimate is likely conservative because actual cash flows for interest payments may exceed Stanford’s reported interest spending. In addition, Stanford’s average interest rate for its taxable debt is probably lower than the average interest rate for tax exempt debt because most of Stanford’s taxable debt was issued as part of the 2009 Series in the low-interest rate environment following the 2008 financial crisis.

Figure 14: Estimated Untaxed Earnings for Investors in Stanford Municipal Bond Debt



Source: Stanford University Financial Reports

It is worth noting, however, that most of Stanford's tax exempt borrowing has occurred during a period of historically low interest rates. Should interest rates rise to a more normal level, the size of tax expenditures per dollar borrowed may also rise.

6. Conclusion

The case of indirect tax arbitrage by Stanford shows concretely how prestige competition and financialization are linked at the organizational level. As first noted by CBO, such indirect tax arbitrage by all universities comes at significant public expense through annual tax expenditures totaling in the billions. Yet the Stanford case shows eligibility for the tax-exempt municipal bonds used for tax arbitrage was completely unnecessary for Stanford to access affordable credit for capital investments. Moreover, Stanford's capital investments were disproportionately for university amenities with questionable benefits other than to maximize Stanford's prestige. In any case, Stanford could easily pay for such capital investments by using endowment assets or taxable debt.

These findings suggest several promising paths for further research. The findings also have significant policy implications. One promising path for further research relates to the policy implication whereby financialization delivers concentrated benefits with costs that are highly dispersed and difficult to discern. As such, I will discuss the policy implications first.

Policy Implications

The use of tax-exempt CHEFA debt by Stanford for indirect tax arbitrage has implications for both federal and state policy. Upon closer examination, we see that indirect tax arbitrage as a financialization strategy has delivered a highly concentrated benefit to Stanford and the investors from which it borrows through CHEFA bonds. First, the class of investors who gain tax exempt interest income through CHEFA bonds is a narrow group of corporate and wealthy investors. This is because the pension plans and non-profit investors have a broader tax exemption for all of their investment income that enables them to earn tax-free income from other higher yield assets. Second, the use of CHEFA bonds is highly concentrated among wealthy, elite universities. Stanford's outstanding \$1.5 billion in CHEFA debt amounts to 32 percent of all outstanding CHEFA debt. The other borrowers with significant outstanding CHEFA debt include other similarly wealthy institutions like the University of Southern California and the Claremont, McKenna Consortium schools. Meanwhile, Stanford did not use capital investments financed by CHEFA borrowing to expand undergraduate enrollment at all.

In contrast to these concentrated financial benefits from indirect tax arbitrage, the financial costs of the strategy are difficult to see and highly dispersed, primarily through federal tax expenditures. If all universities (including public universities but not including states that borrow for state investments in universities) had borrowed using taxable debt, the CBO estimates that \$5.5 billion in tax expenditures could have been saved in 2010. Decreased borrowing and alternative tax avoidance strategies, however, could limit actual increases to federal tax revenue. The U.S. Senate Finance Committee has discussed eliminating the tax-exemption for interest on municipal bond debt for higher education institutions (Congressional Budget Office 2010). Given the limited potential savings, however, there have been no serious proposals to end the tax exemption just for municipal bonds used by universities for tax arbitrage. Proposals to

eliminate the tax exemption for all municipal bonds, however, have gained more traction (Williams Walsh 2012). Indirect tax arbitrage with municipal bonds by universities like Stanford, though, might provide evocative arguments for eliminating municipal bond tax exemptions more broadly.

In a similar vein, states could limit access for universities to municipal bonds for indirect tax arbitrage by changing rules for or eliminating bond issuing authorities such as CHEFA. States, however, would realize even smaller benefits through increased tax revenue because of low state income tax rates and because bond investors may report income in a different state than where the bond is issued. On the other hand, states could substantially increase the fees charged by their authorities for issuing bonds on behalf of wealthy private institutions. For example, the federal tax expenditure for Stanford's municipal bonds in 2014 was approximately \$54 million. Suppose that \$30 million of that tax expenditure was passed on Stanford in lower interest costs. If CHEFA then charged \$15 million in annual fees for issuing Stanford's debt, Stanford would still net \$15 million in savings by using CHEFA bonds instead of taxable bonds. With almost a third of CHEFA's debt being for Stanford, under this scenario one could imagine CHEFA charging \$45 million annually for all CHEFA issued debt.

Aided by indirect tax arbitrage, endowment-funded university expansions can increase costs for state and local government through expanded emergency services, transportation infrastructure demands, and more. So increased CHEFA fees could offset government costs from university expansion by increasing general fund revenue. Alternatively, increased CHEFA fee revenue could be allocated to supporting expanded enrollment at California's more affordable University of California or California State University systems. Additionally, CHEFA could offer fee waivers or reductions to institutions that lack endowment wealth and show that borrowing will be used to replace essential infrastructure, expand enrollment, or improve student degree completion.

Further Research

The findings presented here point especially towards two lines of further research. First, broader comparative and quantitative research is needed to better understand the links I have identified between prestige competition and indirect tax arbitrage as a form of financialization. Studies using financial report data and data from IPEDS, for example, could test if there is a causal relationship between universities positions in ranking competitions and their propensity to employ indirect tax arbitrage to finance capital projects and endowment expansion. Causal prestige competition hypotheses could also be tested against economic hypotheses that universities market positions cause them to employ indirect tax arbitrage in order to improve economic returns from financial investments or market activities that are enhanced by capital projects investments. Testing these potential causes of indirect tax arbitrage could help explain more broadly the extent to which financialization is caused by ideas fostered in a finance culture or by a rational allocation of resources in material ways that intrinsically maximize financial returns.

A second line for further research involves the links between social policy and financialization. As we have seen, indirect tax arbitrage takes advantage of a triple tax to maximize endowment growth and capital project investments – first, the tax deduction for donations to the endowment; second, the tax exemption for investment income earned

by the endowment; and third, the tax exemption for interest income earned by investors who lend to the university through municipal bonds. The tax policies that allow for the triple tax break foresaw neither indirect tax arbitrage nor the large investment returns that arbitrage has helped to boost. Indeed, municipal bond interest was only left exempt from income taxes because of concerns about constitutionality when the federal income tax was established. Such constitutional concerns have long since been dispelled (Joint Committee on Taxation 2008, 16). The unexpected and unintended exploitation of such policies is known as policy drift of scholars of social policy (Hacker 2004, 2005).

Further research is needed on the particular relationship between policy drift and financialization. The case of indirect tax arbitrage by Stanford illustrates a particular dynamic between policy drift and financialization that I call the problem of financialization's invisible costs. Powerful and well-organized actors like Stanford and municipal bond investors can clearly see their benefit from indirect tax arbitrage. The costs of financialization in general, and the triple tax break of indirect tax arbitrage in particular, are arcane and difficult to perceive even in forms like tax expenditure costs. The cost of indirect tax arbitrage is even harder to perceive in its contribution to competitive pressures for universities to increase forms of spending for prestige competition that have dubious social or educational value. As such, it is difficult to mount effective political mobilizations to update policies that allow for the unintended costs of financialization. Under these conditions, policies that allow for negative and unexpected social consequences from financialization seem unlikely to change.³⁴

We could learn more about the dynamics between financialization and policy drift by studying cases in which policy has been successfully updated to mitigate negative social consequences and undesirable public costs from financialization. By studying such cases, we may learn of general strategies by social movements or policy makers that could be employed to redirect tax expenditures towards more promising educational investments than the support of indirect tax arbitrage and other pernicious outgrowths of financialization.

³⁴ Tomaskovic-Devey and Lin (2013) note the direct relevance of policy drift to explanations of financialization, but our knowledge of the link can be expanded further. Hacker and Pierson note the importance of policy drift in the decline of effective tax rates on income from financial investments by the wealthy but do not employ financialization as a concept to make sense of increasing ties between inequality and rising income for the rich from financial activities.

CHAPTER 5:

Conclusion

Findings

The empirical findings in the preceding chapters show that financialization has indeed spread throughout U.S. higher education since the 1990s. Consistent with ideologies of finance, allocations of resources both between and within colleges were rebalanced in ways that maximized returns for investors. As we saw in Chapter 2, “The Financialization of U.S. Higher Education”, radical but concentrated increases in endowment investment returns provided a huge new surplus of resources at elite private institutions. These same elite private institutions, however, had low and flat overall undergraduate enrollments and low-income student enrollments for the last 25 years. For-profit colleges meanwhile netted major increases in operating profits by using federal student loans to crank up enrollments while shortchanging instruction. In the massive middle of the higher education system, state universities muddled through by also using student loans and bond market borrowing to offset declining state support and still keep up with rising enrollment demands. Outside of the wealthiest non-profit schools, increased undergraduate borrowing provided rising returns to private financial institutions and the federal government. This same loan borrowing, however, led households to devote an increasing share of higher education household spending to interest costs.

In the case of both for-profit colleges and Stanford University – a paradigmatic elite non-profit institution – we have seen that financialization was driven by new finance ideologies. We saw in Chapter 3 that at for-profits, private equity investors and publicly traded corporations introduced a new shareholder value ideology from the 1990s forward. This ideology was applied through a new industrial-scale recruitment business model that drove enrollment and profit increases. Consistent with shareholder value principles for maximizing short-term profits and risk-taking, the new industrial-scale model radically drove up throughputs by using student loans to enroll ever more students regardless of qualifications. The model ignored the risks of the public and regulatory backlash that has followed because of abysmal graduation and student loan repayment rates.

Stanford meanwhile joined America’s wealthiest universities by adopting a new Ford-foundation promulgated ideology of endowment capital growth by the end of the 1970s. As I detailed in Chapter 4, the new ideology of endowment capital growth replaced a prior ideology of intergenerational equity that sought only to provide comparable levels of support for the universities’ missions from one generation to the next (Tobin 1974, 427). Within the new ideology, new diversified asset investment strategies doubled the annual endowment rate of return from under 5 percent to 10 percent. New surpluses from endowment returns helped to meet the growing financial demands of university prestige competition. This rise in endowment wealth, however, came at the growing public cost of tax subsidies under a legal framework that predates the ideology of endowment growth and expanded spending on prestige competition.

Financial Ideologies and the Conferral of Social Status

Overall, my findings suggest that financialization has broader consequences for inequality than has previously been understood. Existing scholarship has shown that

financialization has contributed to rising inequality as a form of rent extraction (Froud and Williams 2007; Tomaskovic-Devey and Lin 2011) and by altering employment relations (Goldstein 2012; Lin and Tomaskovic-Devey 2013). My findings reveal that financial ideologies can also shape inequality by changing how we assign social status. In the case of higher education, financial ideologies have further tilted the scales by providing those with wealth and privilege a greater advantage to gain the exceptionally clear conferral of elite status that comes with a degree. Specifically, such students benefit from the increased resources to support their education and credentialing at wealthy private universities.

On the other hand, financialization has further disadvantaged the underprivileged by pushing them increasingly into schools where earning a degree is rare. What is more, low-income students have had to take on increasing debt to attend college for which they are stigmatized when they are unable to make repayments (Fourcade and Healy 2013). Particularly in the case of for-profits, the rare few that graduate are left with degrees that are viewed as substandard by prospective employers and society (Deming et al. 2016). At the same time, students of color and low-income students are especially less likely to earn a degree at all if they attend a for-profit (Gelbgiser 2015).

Financial Ideologies and Public Institutions

Future research should ask if the spread of financial ideologies is also responsible for financialization at community colleges and the 4-year state universities and non-profit schools that enroll the vast majority of U.S. undergraduates. In Chapter 2, we saw that financialization was widespread across such institutions in the form of rising student loan origination and institutional borrowing through bonds and commercial paper. The overall argument of this dissertation anticipates that the adoption of strategies from financial ideologies is, at first, largely in service of longstanding organizational goals. In the case of Stanford as an elite non-profit school, new endowment strategies were adopted in line with longstanding goals for maximizing prestige. We might expect that community colleges and less selective state universities embraced financial strategies to overcome challenges from state funding cuts to their original missions of mass undergraduate education.

In work outside of this dissertation, my colleagues and I have found evidence for the rise of a finance ideology in the University of California system (Eaton, Goldstein, et al. 2013; Eaton, Habinek, et al. 2013). At the University of California, a new finance ideology guided decisions to dramatically increase capital projects borrowing. The university even employed risky interest swap agreements to hedge against growing university borrowing. In bond contracts and university policies to please credit rating agencies, UC applied a new finance ideology that reconceived current and future students as revenue streams that could be collateralized. In the face of declining state appropriations and funding for capital projects, this new conception of students enabled the university to rationalize greater borrowing. Increased borrowing was seen as a means to expand capital project investments that would attract higher-tuition-paying students and enhance other revenue streams.

The University of California case reflects that the financial ideologies are adopted in practice according to often complicating competing pressures and organizational goals. On the one hand, the university hoped to use increased borrowing to continue growing

undergraduate enrollments in line with its historical purpose and oversight by state policy makers. On the other hand, the university used borrowing for investments in sports stadiums, museums, and campus amenities that could boost its prestige and rankings as it sought to keep up with the endowment-fueled extravagances and faculty pay of Stanford and other wealthy non-profits.

In contrast to Stanford, however, the University of California has had less success using a new financial ideology to navigate these competing pressures, in part because of limits from public ownership and oversight. To begin, increased borrowing was undertaken with the explicit expectation by ratings agencies that the university would dramatically increase tuition revenue in future years. Moody's, for example, argued in a September 2012 Aa2 rating of University of California lease revenue refunding bonds:

UC's powerful student market position allows it to compensate for state funding cuts by raising in-state tuition dramatically. However, future exercise of pricing power will more likely be seen in growing non-resident tuition.

Four years later, this assessment could not have proved to be more wrong. In fact, California state lawmakers have required that the university freeze in-state tuition rates at 2011 levels ever since 2012 in order to receive hundreds of millions of dollars in state appropriations (Eaton 2016). Under further pressure from state lawmakers, the university has also recently agreed to cap out-of-state enrollment while boosting in-state enrollment to meet rising demand (Saul 2016). At the same time, capital projects intended to strengthen other revenue streams have also fallen short. Most prominently, a \$450 million rebuild of UC Berkeley's Memorial stadium failed to generate more than \$100 million of expected revenue from athletic and entertainment programs (Freedman 2014). As debt obligations have started to come due, the UC Berkeley campus has now found itself in a \$150 million deficit (Watanabe 2016).

Financiers in College Governance

Multiple important questions follow from the blocking finance ideology strategies at the University of California. First, given UC's problems in adopting a finance ideology as a public institution, is it reasonable to expect that other public universities and community colleges also adopted a finance ideology? One possibility is that public institutions did adopt finance ideologies around the turn of the 21st century but only to a limited extent because of the constraints of their public status. By adopting finance ideologies, public institutions could have gained an organizing cognitive framework for their implementation of tuition increases financed by student loans to offset state funding cuts. Likewise, public institutions would gain an orienting mind frame for their increased direct bond borrowing in place of declining state support for capital projects. Further research should examine whether financial ideologies did indeed play such a role in the rise of student debt and institutional borrowing at public institutions more broadly.

A second question is why did multiple types of U.S. colleges, including the public University of California, adopt a finance ideology in the first place? This question is particularly salient given that the adoption of a finance ideology at the University of California has had such mixed results. As discussed in the introduction, state funding cuts

and the failure of state support to keep up with enrollment were critical factors in the case of public institutions. Finance ideology offered an alternative solution for public colleges to obtain capital and generate revenue. To an extent, the financial strategies pursued by the University of California did in fact enable it to survive a series of extraordinary state funding cuts since the turn of the century. Still, we must ask why UC and other public colleges could not or chose not to adopt other alternatives. For example, why were public colleges unable to successfully push state and federal lawmakers to provide sufficient funding for enrollment growth?

My previous work on financialization at the University of California suggests that a finance ideology spread to the university via the increasing representation of powerful financial sector actors on its governing board (Eaton, Goldstein, et al. 2013; Eaton, Habinek, et al. 2013). This increasing reach and influence of financiers and their thinking likely reflects their increasing economic and political power throughout U.S. society. Quantitative and qualitative comparison of such influence across different types of institutions, however, could more fully explain where and why finance gains the greatest traction. One study has found that Wall Street representation on the boards of private research university and liberal arts colleges increased dramatically between 1989 and 2014 (Jenkins 2015). At the 23 top private research universities, the share of board leadership positions occupied by financiers increased from 26 percent to 56 percent. At the 29 top liberal arts colleges, the number of board officers from finance increased from 28 percent to 44 percent. Comparable research is needed to compare how the board composition of public universities and community colleges may have changed.

Beyond comparing the growth in finance representation on college governing boards, we need closer examination of how and why financiers gain representation. Comparison between different types of colleges could again provide valuable insights. To aid with fundraising, college boards might have increasingly brought financiers and financial professionals onto their boards because of their disproportionate rise in wealth and income in the new era of financialization (Lin and Tomaskovic-Devey 2013; Tomaskovic-Devey and Lin 2011). If this is the case, we should expect colleges that rely on private fundraising to particularly increase finance representation on their boards. Relatedly, colleges with endowments might have increasingly enlisted financiers for their boards to help undertake more aggressive and complex endowment investment strategies. In that case, we would expect colleges with endowments to add financiers to their boards at higher rates.

Collective Political Responses to Financialization

A final area for further research involves collective political responses by society to the financialization of U.S. higher education. Research thus far has focused on how different social groups have responded to the rise of finance by adopting financial ideologies and cultures in household life (Davis 2009; Fligstein and Goldstein 2015; Martin 2002; van der Zwan 2014). These important accounts show how higher socio-economic status groups have particularly embraced a financial ideology to manage the household as a bundle of assets to be borrowed against and invested in. Lower socio-economic groups have also turned to finance, but in a more defensive way. Faced with declining and stagnant incomes, middle and lower socio-economic groups have relied on debt to cover both essentials and as well as new consumer purchasing needed to “keep up

with the Joneses” (Fligstein and Goldstein 2015). Increased student loan borrowing to cover increasing tuition at both state and non-profit schools reflects this adoption by households of new financial cultures.

We know much less, however, about how different social groups may respond politically to the spread of finance ideologies in U.S. higher education. The rise of the Occupy Wall Street movement in 2011 and its polemics against student debt give valence to this question. Since 2011, more durable coalitions of student, youth, labor and progressive organizations have arisen to focus efforts on reducing or eliminating student debt (Eaton 2016). These coalitions have fought for tuition freezes with considerable success in states including California, Massachusetts, New Jersey, New York, Ohio, Oregon, and Washington. A national coalition named Higher Ed Not Debt, meanwhile, has won substantial victories to reduce and forgive existing debts. Building on the 2010 elimination of federal subsidies for private student loan programs, these efforts are already transforming U.S. student loan programs. This line of reform is shifting U.S. student loans to closely resemble programs in Europe that work more as a universal entitlement for which borrowers only have to make repayments if they achieve substantial future earnings. The push to reduce student debt may also be entering a new, more radical phase, with both the Democratic Party and Hillary Clinton as its 2016 Presidential nominee calling for tuition and debt-free³⁵ higher education for all households with earnings below \$125,000 a year (Saul and Flegenheimer 2016).

To explain the potential and challenges of these counter-movements to finance ideologies in U.S. higher education, future research could build upon existing scholarship regarding the public-private welfare state. A strong expansion of public higher education and a rollback of finance ideologies would run counter to some theories of the public-private welfare state. Healthcare and retiree beneficiary groups have been seen as fragmented and weak because of the decentralized mix of public and private organizations that deliver their benefits (Hacker 2002; K. J. Morgan and Campbell 2011). At times, such groups fail to even appreciate that they are beneficiaries of a government program (Mettler 2011). In contrast, private provider organizations are highly organized and motivated to defend their cut of government subsidies against the expansion of direct public provision (Hacker 2002). Given these dynamics, the political resonance of recent calls to expand free public higher education underscores the need for further research that accounts for the symbolic power of state universities and the strength of their organized beneficiaries (Pierson 1995).

The reduction or elimination of student debt, however, will not alone reduce the organizational inequalities of U.S. higher education that financialization has exacerbated. As noted in Chapter 4, efforts to reduce student debt have also been accompanied by aggressive new regulations to curtail predation, student loan defaults, and miserable employment outcomes at for-profit colleges. State and federal lawmakers have simultaneously introduced legislation to reduce tax subsidies for wealthy endowments at schools that do not expand undergraduate educational benefits to broader and less wealthy groups of students (Faler 2015; Lorin 2016). Just as finance ideologies provided a motivating vision that has pushed financialization forward, an alternative ideology may be needed to advance and secure a comprehensive package of such higher education

³⁵ Debt free higher education proposals call for households to only pay college expenses to the extent that they can do so without student loans.

reforms in the wake of financializaion. Equity and equal opportunity are some of the clear ideals that the movement against student debt has put forward. A coherent post-finance ideology, however, is yet to be formed.

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APPENDICES

Chapter 2 Appendix

The analysis in this paper uses a unique new database that we have constructed to harmonize financial, enrollment, and other organizational data for all colleges that are eligible to receive Title IV funds under the U.S. Higher Education Act. For this paper, we used the database's variables from the Integrated Post Secondary Education Data System (IPEDS) and the National Association of College and University Business Officers (NACUBO) Endowment Survey. We also use original data gathered by the authors to code the ownership form of all Title IV eligible for-profit colleges from 1997 through 2012. The data on ownership form was created using the Thompson One database of private equity investment, for-profit online course catalogs, SEC 10-K statements, and unpublished documents on for-profit college ownership provided to the authors by the U.S. Senate Committee on Health, Education, Labor, and Pensions. We use IPEDS data only after 2003 because of problems of missing data for key variables in years prior to 2003. IPEDS data was used to estimate total revenue for two-year and above colleges as a key component of all funding for higher education from the federal government, states, municipalities, households, donors, and enterprises operated by colleges. IPEDS data was also used to estimate colleges' total spending, institutional debt, interest spending for institutional debt, full-time-equivalent (FTE) student enrollment, and student loan borrowing by full-time freshmen at four-year colleges. Data from both NACUBO and IPEDS was used for endowment asset analysis and estimates.

This data appendix will explain how we dealt with problems of missing data in IPEDS and NACUBO for the years 2003 and after. We will address these issues for data from each section of the paper in the order that they appear in the paper.

Total Spending on Higher Education

Before proceeding with section-by-section issues, we will first address how we estimated total higher education expenditures, because we use total higher education expenditures as a baseline for comparison throughout the paper. For at least the last 15 years, the U.S. Department of Education and the OECD have used data from IPEDS to estimate total spending on higher education in the U.S. This measure simply takes the sum of all expenditures reported by all Title IV institutions reported in IPEDS. This is a better measure for total higher education spending than measures of colleges' total revenue which are extremely volatile in years with large swings in endowment asset values. Total college spending thus better represents the amount of aggregate funds from many sources such as tuition, endowment returns, and state appropriations that get expended on higher education. This measure, however, has underrepresented higher education spending for two reasons. First, 5 percent of public colleges and 15 percent of community colleges failed to report total spending in 2003 in part because of changing reporting standards. The percentage of colleges that failed to report declined quickly in the following years. Second, measures of spending by colleges do not account for household spending on interest for student loans.

Undercounting total higher education spending makes spending on higher education financing costs appear larger as a share of total spending because it shrinks the

denominator in this equation. So, we developed procedures for improving the estimate of total spending. We addressed the first problem of missing data from public and community colleges with two imputations. First, we used data for total spending beginning in 2002 and made a linear imputation by adding together total spending from year n-1 and year n+1 and dividing that sum by 2 to estimate total spending for a missing observation with year n. Second, we calculated the average change in total spending by sector for each year from 2002 to 2012. We then divided the average rate of change by total spending for year n+1 to estimate total spending for each college with a missing observation for year n beginning with 2011 and proceeding in declining order to 2003. After the imputation procedure, we summed all reported and imputed spending to get total spending by sector and for all colleges. This method therefore assumes that the average rate of change for college spending would be the same for colleges with missing data as those without. We believe this is a better assumption than the assumption that colleges with missing data spent nothing in the years for which they have missing data. This assumption and imputation also have the benefit of making our estimates conservative for measuring financing costs as a share of all spending. The effect of the imputation was to increase the total spending estimate by \$9 billion or 2% in 2003. The effect of the imputation declined to nearly 0% for 2005 and all subsequent years. Without this increase in the estimate of total spending for 2003, financing costs as a share of all spending would have been 6% that year. Their change in the share of spending estimate is negligible in later years and zero in 2012.

For all financial measures by quantile, we use only the first linear imputation described above. Then, in calculating shares of spending by quantile such as in Figure 4, we include only institutions that reported all relevant data for all years so as to hold the sample constant.

We address the second issue of spending on interest for student loans by simply adding our estimate of annual student loan interest to the sum of total spending by colleges from IPEDS. The effect of this adjustment is small and again makes estimates of the relative size of financing costs more conservative. Even in 2012, after student loan interest payments had increased to their largest share of overall spending, this caused a decrease of less than 1 percent in our estimate for financing costs as a share of all spending. We explain the method by which we estimate total student loan interest spending later in this appendix.

The same adjustment to total higher education spending is not necessary for interest on college institutional debts or proprietary college profits. These financing costs are already included in total spending reports in IPEDS. Interest payments for institutional debts are explicitly included in total spending reports. Profits are not explicitly included in spending reports as they may be retained as earnings just as returns from endowments can be retained. Like endowment returns, however, profits may be expended or invested in a college's activities in later years and are at that point represented in total higher education spending.

Endowment Data

In our data harmonization, we give primacy to the endowment data reported to NACUBO. The number of colleges reporting endowment asset values to NACUBO annually ranged from 739 to 842 between 2003 and 2012. By harmonizing NACUBO

data with IPEDS data, we were able to obtain data for endowment assets for all years from 2003 for 209 public systems and 871 private systems. This provides us with full endowment asset data for 68 percent of all undergrad-enrolling public systems. We have the same coverage for 69 percent of private systems. This is the most complete data set for endowment assets that we know of, and it is currently not possible to determine what share of institutions for which we lack data actually operate endowments.

For all statistics and figures on endowment assets by quantile, we used only actual reported data and estimates imputed with the simple linear imputation for years in which a missing observation for a given institution was available in both the previous and following year. We then used only data for institutions for which this method provided full data for all years from 2003 to 2012. In doing so, we hold the sample constant across years so that trends do not reflect changes in sample inclusion. As Table 1 shows, this provided full data on endowment assets by endowment asset wealth quantile for 215 public systems and 871 private systems. Quantiles for all years are based on 2003 endowment asset values.

All endowment *spending* statistics and figures by quantile include actual data and *college level estimates* of endowment spending for all years from 2003 to 2012 for all of the 215 public systems and 871 private systems for which we have full asset data for all years as described in the previous paragraph. The number of public, undergraduate-enrolling systems for which we have data on spending rates from endowments ranges from 117 in 2003 to 132 in 2012. Such data for private systems ranges from 377 systems in 2003 to 434 in 2009. Reported endowment spending rates were between four and six percent for almost all reporting institutions. Spending rates tended to fall between five and six percent at private institutions and between four and five percent at public systems. Given this consistency, we used the average annual spending rate for an institution's sector for the given year if an institution did not report its spending rate for that year but had reported its endowment asset values for all years.

When calculating total endowment asset growth and total spending from endowments as a share of all university funding, we applied to missing endowment data the same broader imputation method used for total spending that is described above in the "Total Spending on Higher Education" section of the appendix. The effect of this imputation on total endowment asset and spending values was negligible. The share of public colleges reporting no endowment assets fell from 16 percent in 2003 to 5 percent in 2012. The share of private colleges reporting no endowment assets fell from 16 percent to 15 percent. After imputation, total endowment asset values increased only 1 percent in 2003 and increased less than 1 percent in 2012. This is because of the relatively small value of endowment assets held by colleges that reported assets some years but not others.

In Figure 11 and the conclusion, we estimate spending from endowments per FTE by the number of students enrolled at all institutions, including students enrolled at proprietary colleges and public, private, and community colleges that did not report endowment spending. We do so to show how rising endowment spending figures in the overall higher education system.

Financing Costs for Colleges Institutional Debts

For publics and non-profits, we calculated total annual interest spending for institutional debt using data from the Integrated Post-Secondary Education Data System. This is measured as total annual expenditure on interest payments. The number of public undergraduate-enrolling systems for which such data is available ranges from 182 or 59 percent of such systems in 2003 to 211 or 69 percent in 2012. It is not known what share of the remaining systems actually issue their own debt as opposed to receiving capital projects funding financed by borrowing by state governments, local governments, tribal authorities, or by federal appropriations in the case of military institutions. The number of private undergraduate-enrolling systems for which such data is available ranges from 806 or 62 percent of such systems in 2003 to 850 or 65 percent in 2012. As in the case of endowments, we use IPEDS data on total spending by college to calculate spending on interest for institutional debts as a share of total spending by colleges.

When we disaggregate interest spending averages by sector and quantiles of endowment wealth, we only use the simple linear imputation. Again, averages by quantile are only for 209 public and 871 private systems for which we have endowment asset values for all years. All but one private system above the 89th percentile reported interest spending data for all years. All public institutions above the 89th percentile reported interest spending for all years. For private institutions below the 90th percentile, 82 percent of institutions reported interest spending for all years. For public systems below the 90th percentile, 87 percent of systems reported interest spending for all years. Given these high rates for reporting of interest spending for these institutions with endowment assets for all years, our reported results by endowment asset quantile *do not* further exclude institutions for which no interest spending was reported in some years. We found almost no difference in unreported results for interest spending averages by endowment quantile that did exclude institutions for which no interest spending was reported in some years

For missing IPEDS college interest spending and debt data, we use the broader imputation method described in the total spending section of this appendix only when estimating total institutional debt costs as a share of all spending of all types on U.S. higher education. Without this imputation, missing data in earlier years makes the increase in interest spending appear larger as more colleges report their interest spending in later years. Our broader imputation method allows us to estimate interest-spending data from 2003 to 2012 for 92% of public colleges, 91 percent of private colleges, and 79 percent of community colleges. This imputation increased the overall value of interest payments for all colleges by 11% in 2003 and by 1% in 2013. This provides a more conservative estimate of the total increase in interest spending for institutional debt.

In Figure 11 and the conclusion, we estimate interest spending per FTE by the number of students enrolled at all institutions, including students enrolled at proprietary colleges and public, private, and community colleges that did not report interest spending. We do so to show how rising institutional interest spending contributes to the increase in overall financing costs relative to all spending throughout the higher education system. The increase in institutional interest costs per student over its 2003 level is 40 percent when estimated this way. The increase in institutional interest costs is 38 percent when estimated using only enrollments at colleges that reported interest data.

Proprietary College Profits

As we noted in the article, we acquired annual figures on operating profits for publicly traded firms from the income sheets of their fiscal year-end 10-K statements filed with the SEC. In doing so, we found that operating margins reported in IPEDS were closely correlated to operating margins reported by publicly traded firms such as the Apollo Group for whom Title IV institutions make up the overwhelming majority of their business. To be consistent across ownership forms, and because closely held companies and firms owned by private equity firms do not publicly report income statements, we use IPEDS revenue and expenditure data from IPEDS to estimate operating margins from Title IV activities for all for-profits. We matched individual campus records in the IPEDS data by institutional affiliation, and subtracted total expenses from total current funds revenues.

No imputation was needed for missing IPEDS data for calculations to estimate proprietary college operating profits. Less than 1 percent of proprietary colleges had missing data for either total expenditures or total revenue from 2003 to 2012.

Financing Costs for Student Loans

Annual interest payments on institutional debts are tracked for each college and published in the Integrated Postsecondary Education Data System (IPEDS). Annual interest payments on student loans, however, are not tracked at the college level. And interest payments on Federal Family Education Loans (FFEL), the largest area of student loan origination prior to 2010, have never been tracked at any level. To address this inadequacy, we use data on annual student loan origination by loan type, the annual interest rates for each student loan type, and average time in deference and in repayment for student loans overall to estimate annual interest payments for each student loan cohort by loan type. For each year, total student loan interest payments by loan type are the sum of payments across all cohorts, reported in constant 2012 dollars. Below, we describe the exact procedures for calculating these annual interest payments by loan type which are carried out in the supplemental “Amortization for Student Loan Interest Payments _2015_11_18.xlsx” workbook which is also available online.

Data on loan origination and interest rates came from the following sources. Our loan origination data by loan type for all federal and non-federal loans is by academic year and comes from the College Board.³⁶ For federal student loans, we use the annual interest rates for each academic year reported by FinAid.org.³⁷ For non-federal student loans, we used the estimates of average annual private student loan interest rates reported in the Consumer Financial Protection Bureau’s 2012 *Private Student Loans* report. The

³⁶ See College (The College Board 2013b). The College Board uses unpublished data from Policy, Budget, and Analysis Staff, U.S. Department of Education, and the National Student Loan Data System (NSLDS) of federal loans. College Board, *Trends in Student Aid: 2013* reports on page 34 that, “estimates for 2010-11 through 2012-13 provided by the Consumer Bankers Association, MeasureOne, and the Consumer Financial Protection Bureau. Earlier data based on information provided by lenders supplemented by data from annual reports and from NPSAS, 2008. Data on lending also collected from the major credit unions and their associations. Estimates of institutional lending are based on NPSAS, 2008 and 2012, as well as a survey of institutions conducted for the College Board by the National Association of Student Financial Aid Administrators (NASFAA). Data on loans from states are based on information collected from staff of state-sponsored private loan programs or state grant agencies, in addition to NASSGAP.”

³⁷ See <http://www.finaid.org/loans/historicalrates.phtml>.

CFPB used 2011 sample lender loan margin and historical LIBOR data to estimate these mean interest rates for private student loans with a standard methodology.³⁸ We use an estimate of private student loan interest rates as our estimate of interest rates for all non-federal loans. Some non-federal student loans are issued by states and nonprofits. But the vast majority of non-federal student loans are private student loans issued by banks.

Very little data is available on how quickly or slowly borrowers pay off student loans. We assume that the average time from the origination of a student loan until it enters repayment is two years. Absent better data, we use two years as a conservative estimate given that most borrowing is by four-year degree students for whom the median time to complete a degree is 4.33 years.³⁹ As national enrollment grew annually from year to year and dropouts thinned second, third, and fourth year cohorts, it was more likely in each year that borrowers would come from 1st and second year cohorts than later cohorts. To be conservative, however, we assume an equal likelihood that borrowers came from a given cohort between one and four.

We further assume that all student loans are paid off at a constant rate over seven years. A seven-year average post-enrollment repayment time is latest estimate available to the authors for the average time to repayment for federal student loans.⁴⁰ It is likely that many student loans are paid off more quickly at the end of the repayment period than at the beginning because borrowers are entering the labor market and have more resources to pay down a greater share of the principal. If this is the case, our estimates of interest payments are conservative because they assume that borrowers paid principal down at the rate necessary to generate fixed monthly payments at a given interest rate while the loan was in repayment. To the extent that borrowers actually paid down more principal later in the repayment period, they also paid more interest on that principal earlier in the repayment period.

Using the above data, we used the following process to calculate annual interest payments on all outstanding student loans. For each loan type, we calculated the total interest payments made in each year on the total loan origination for each annual cohort of loan recipients in nominal dollars. For the two years that we assumed student loans remained deferred before entering repayment, we also assumed that interest was not compounded, but was instead paid in the year of its accrual. We do not expect that this assumption holds equally across all loan types, but assuming that this interest is not carried forward yields the most conservative estimate of interest payments overall.

For the seven years that we assumed that the loans were in repayment, we calculated the total amount of principal and interest paid in the current year based on an amortization schedule that would generate fixed monthly payments over the remaining years of the repayment period. Because repayment interest rates varied from year to year, we repeated these calculations for each year based on the principal remaining from the previous year and number of monthly repayments remaining in the seven-year schedule. The result was a series of nine annual payments for each cohort of loans made on the total loan origination for each loan type (except for subsidized Stafford direct loans).

³⁸ See page 14 of *Private Student Loans*.

³⁹ See <http://nces.ed.gov/pubs2011/2011236.pdf>

⁴⁰ This estimate was provided by David Bergeron, former U.S. Acting Assistant Secretary for Higher Education based on technical briefings provided by the Department of Education prior to 2010.

To obtain the total interest payments made in a given year on a given loan type, we summed the total interest payments made on each cohort of loans in a given year. Because we assumed that the period from origination to complete repayment was nine years in total, it was necessary to estimate the interest payments made on all student loans from the 1993 cohort (who paid on their student loans through 2002) through to the 2012 cohort. We then converted the resulting annual total into constant 2012 dollars. Second, we calculated what share of each monthly annuity payment went to principal payments and what share went to interest payments.

The procedures governing the accrual of interest during the initial deferment period differ considerably by loan type, and we modified our calculations for each loan type to reflect these key differences. For subsidized Stafford FFEL loans, we calculated interest payments for the two-year period before the loans entered repayment and include these in our annual totals because they reflect payments by the federal government to the private originators. For direct subsidized Stafford loans, we calculated no interest or principal costs or payments for two years after the origination of a given loan cohort, because the federal government essentially pays itself interest during this period. For unsubsidized loans, which make up all other loan origination, we calculated interest payments for the two-year period before the loans entered repayment. In most cases it is likely that the interest accrued during deferral on unsubsidized loans is not paid and added to the principal at the start of repayment, but assuming it is paid yields a more conservative estimate.

Our calculations also take into account the annual change in interest rates on federal and private variable rate loans. Annual interest rates for federal loans vary based on the type of loan, whether the loan is in its initial deferment period or in repayment, and the date on which the loan was originated. For subsidized and unsubsidized federal loans, we specified an annual interest rate schedule for each loan cohort to account for these variations. For non-federal loans, detailed information is not available, and therefore we used the same private student loan interest rate estimate from the CFPB report for a given year for each loan cohort in its initial deferment or in repayment during that year.

A further word is in order about the average time to repayment from the end of enrollment. This is an average for all federal student loan types. So it is only appropriate to apply the seven-year average repayment time to national estimates of interest payments across all sectors and across all loan types. For this same reason, we are unable to provide estimates of student loan interest payments by sector. We have requested from the Department of Education data a set of more current estimates of average time in repayment that are broken down by borrowers' risk category. The distribution of borrowers by risk category varies by higher education sectors. So we hope to use this data in the future to estimate variation in annual interest payments on student loans by sector. Given the recent increase in default and deferment rates, we suspect that the average time in repayment has increased. If so, our estimate of annual student loan interest payments is lower than it should be. We will only know for sure after receiving updated data from the Department of Education.

We also use the seven-year average repayment time to estimate annual interest payments on non-federal student loans, a category that includes private student loans. We know of no comparable data that is publicly available for average repayment times for

non-federal student loans. It may be possible to estimate average repayment times for private student loans by examining data published for student loan asset backed securities. As noted, the vast majority of non-federal student loans are private student loans. We suspect that average repayment times for non-federal student loans may be higher than the seven-year average because of the higher default rates for private student loans which make up much of the non-federal student loans.⁴¹ If so, our estimate for annual interest payments on non-federal student loans is conservative.

⁴¹ (Consumer Financial Protection Bureau and U.S. Department of Education 2012) *Private Student Loans*.

Chapter 3 Appendix

As an additional robustness check, I estimate fixed effects models for the relationship between change to publicly traded ownership and student outcomes for particular socio-economic groups within cohorts. Table A1 provides summary statistics for available variables for graduation and student loan repayment rates by socio-economic subgroups and categories. Because this appendix only reviews fixed effects models for for-profits with ownership changes from privately held to private equity, the summary statistics are only for all for-profit colleges that offered at least a 2-year degree.

Table A1: Summary Statistics for Student Outcome Variables for Cohort Subgroups

Variable	Observations	Mean	Std. Dev.	Min.	Max.
Less than 4-Year Degree Graduation Rates for Entering Cohort Groups					
African American Men	9,196	0.44	0.32	0	1
African American Women	10,050	0.48	0.31	0	1
Hispanic Men	7,592	0.51	0.34	0	1
Hispanic Women	8,830	0.56	0.33	0	1
White Men	11,194	0.56	0.30	0	1
White Women	12,127	0.59	0.26	0	1
4-Year Degree Graduation Rates for Entering Cohort Groups					
African American Men	1,942	0.27	0.33	0	1
African American Women	1,959	0.29	0.33	0	1
Hispanic Men	1,729	0.33	0.33	0	1
Hispanic Women	1,791	0.35	0.34	0	1
White Men	2,428	0.37	0.31	0	1
White Women	2,423	0.39	0.32	0	1
Student Loan Repayment Rates for Exiting Cohort Groups					
Degree Completers	6540	0.62	0.17	0.08	1.00
Non-Completers	5281	0.39	0.16	0.04	0.91
Low-Income	6627	0.49	0.17	0.00	1.00
Middle Income	4795	0.63	0.15	0.14	0.98
High Income	2638	0.74	0.13	0.27	1.00
Dependent Students	5376	0.59	0.18	0.05	0.97
Independent Students	6525	0.51	0.17	0.00	1.00
Pell Recipients	3399	0.48	0.15	0.00	1.00
Non-Pell Recipients	4820	0.69	0.15	0.15	1.00
Women	6540	0.55	0.17	0.06	1.00
Men	3777	0.49	0.18	0.06	0.97
First Generation	5777	0.54	0.17	0.06	0.98
Not First Generation	5455	0.57	0.18	0.03	1.00

If the industrial recruitment business model under shareholder value were contributing to bad student outcomes, we would expect the relationship to be consistent across different socio-economic groups. We especially should expect the relationship to be consistent if shareholder value cost-cutting tactics are a factor. Otherwise, increases in negative student outcomes may only be driven by industrial recruitment's tendency to increase the share of students with less college preparedness and fewer socio-economic

resources. Estimated results show consistent negative effects on both graduation rates and student loan repayment rates across subgroups.

I find negative effects on graduation rates are consistent across major entering cohort subgroups for race, gender, and ethnicity. Table A2 shows results for changes to publicly traded ownership for less-than-4-year degree graduation rates. Here we see a negative difference in graduation rates of -.01 to -.08 for all race, gender, and ethnicity subgroups except for African American men for whom there is no estimated difference.

Table A2: Fixed Effects Estimates for Less than 4-Year Degree Cohort Subgroups

	African American	African American	Hispanic Men	Hispanic Women	White Men	White Women
Ownership Form Change	0 (.037)	-0.05 (.033)	-0.012 (.032)	-0.059 (.037)	-0.012 (.041)	-0.084 * (.033)
Constant	0.901 *** 0.062	0.803 *** 0.07	0.643 *** 0.064	0.714 *** 0.039	1.06 *** 0.064	0.923 *** 0.021
R-square	0.06	0.087	0.072	0.049	0.069	0.078
Institution-years	801	924	623	795	948	1061
Institutions	109	118	102	113	119	119
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: Cluster-robust standard errors are in parentheses for clusters of campuses by firm at the time of the ownership form change event.

* p<0.05, ** p<0.01, *** p<0.001

Table A3 shows the estimated difference after changes to publicly traded ownership for 4-year degree graduation rates. Here we see a negative difference in graduation rates of -.02 to -.09 for all race, gender, and ethnicity subgroups except for Hispanic women. For Hispanic women, the estimated difference is positive .022 but with a particularly large standard error of .1.

Table A3: Fixed Effects Estimates for 4-Year Degree Cohort Subgroups

	African American	African American	Hispanic Men	Hispanic Women	White Men	White Women
Ownership Form Change	-0.061 (.086)	-0.054 (.056)	-0.043 (.042)	0.022 (.101)	-0.085 (.054)	-0.016 (.042)
Constant	0.402 * 0.204	0.393 ** 0.13	0.427 *** 0.026	0.273 *** 0.058	0.465 *** 0.056	0.643 *** 0.115
R-square	0.051	0.106	0.11	0.108	0.074	0.07
Institution-years	245	267	210	226	321	325
Institutions	37	39	36	36	40	40
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: Cluster-robust standard errors are in parentheses for clusters of campuses by firm at the time of the ownership form change event.

* p<0.05, ** p<0.01, *** p<0.001

Similarly, I find consistent negative effects for 3-year student loan repayment rates across major exiting cohort subcategories for degree completion, income at time of borrowing, dependent vs. independent student status, receipt of need-based Pell Grant financial aid, gender, and first generation student status. There are limitations to this robustness check, however. First, there are overlaps in the subgroups. For example, loan repayment rates for low-income students that completed a degree would be reflected in the loan repayment rates: both the low-income category and the degree completer category. Data is not available for cross-tabulated intersections of these categories.

Second, only 15 to 22 institutions reported data for each subgroup across years in which an ownership change occurred, and standard errors are consistently large.

Nevertheless, Table A4 shows the estimated difference in loan repayment rates for exiting cohort subcategories after changes to publicly traded ownership. The estimated difference in loan repayment rates ranges from -0.01 to -.057 for 9 of the 13 subcategories. A negative difference of less than -.01 is estimated for the degree completer category and the medium income category. A positive difference of less than .01 is estimated for the high-income category and non-Pell Grant recipient category.

Table A4: Fixed Effects Estimates for Student Loan Repayment Rates for Cohort Subcategories

	Degree Completers	Degree Non-Completers	Low Income	Medium Income	High Income	Dependent Status	Independent Status
Ownership Form Change	-0.005 (.023)	-0.04 (.039)	-0.027 (.025)	-0.004 (.058)	0.008 (.021)	-0.01 (.036)	-0.016 (.021)
Constant	0.822 *** 0.037	0.468 *** 0.015	0.628 *** 0.063	0.796 *** 0.058	0.8 *** 0.012	0.781 *** 0.06	0.645 *** 0.056
R-squared	0.723	0.556	0.749	0.565	0.493	0.527	0.752
Institution-years	83	71	81	72	50	81	79
Institutions	22	19	22	19	15	22	22
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Pell Recipients	Non-Pell Recipients	Women	Men	First Generation	Not First Generation
Ownership Form Change	-0.057 (.047)	0.005 (.035)	-0.015 (.024)	-0.12 *** (.024)	-0.052 * (.026)	-0.033 (.033)
Constant	0.654 *** 0.109	0.837 *** 0.037	0.72 *** 0.061	0.396 *** 0.069	0.718 *** 0.063	0.734 *** 0.059
R-squared	0.785	0.566	0.742	0.567	0.756	0.684
Institution-years	48	74	83	33	78	79
Institutions	19	20	22	10	22	22
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State-by-Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: Cluster-robust standard errors are in parentheses for clusters of campuses by firm at the time of the ownership form change event.

* p<0.05, ** p<0.01, *** p<0.001